UNIVERSIDADE DE LISBOA

FACULDADE DE PSICOLOGIA

DR. JEKYLL OR MR. HYDE?

NORMATIVE INFLUENCE ON JUDGMENT AND BEHAVIOR

Sílvia Coelho Ribeiro Fernandes Luís

Tese orientada pelo Prof. Doutor José Manuel da Palma-Oliveira

DOUTORAMENTO EM PSICOLOGIA

(PSICOLOGIA SOCIAL)

2011

Agradecimentos

Ao Professor Palma, que entre a Psicologia, as relações interpessoais, e as Ciências, me tem ensinado a pensar, a interrogar e a compreender. Efectivamente, os problemas teóricos são como as peças de música: temas com variações.

To Professor Wes, thanks for welcoming me in San Marcos, for embracing, questioning, and clarifying my research questions, and also for allowing me to participate in your ongoing research. It has been a pleasure working with you.

Ao grupo de Comportamento Humano e Ambiente. Obrigada por me terem ouvido falar de normas vezes sem conta. Em particular, obrigada ao Rui de Carvalho, que, já desde a época da licenciatura, tem cuidadosamente seguido o meu trabalho e estado sempre disponível para colaborar e ouvir. À Fátima Bernardo, por dar vida à Psicologia Social, pelos divertidos momentos de partilha, e pelas práticas dicas de trabalho. Ao Fernando Oliveira, pela força moral e constante presença.

Ao grupo de Cognição Social pela disponibilidade nos seminários de investigação. Agradeço especialmente ao Prof. Mário Ferreira e ao André Mata. Um dos estudos aqui apresentados teve origem nas aulas de *Atitudes e Persuasão* do Prof. Mário. O interesse que demonstrou pelo projecto foi um factor essencial para a sua realização. Ao André, por ter acompanhado o inicio deste projecto e aparecido sempre que preciso.

Gostaria também de agradecer a todos aqueles que possibilitaram a concretização dos estudos. À Ana Cristina Neves, Fátima Bernardo, Isabel Ramos, e Pedro Simões, que colaboraram na recolha de dados para o Estudo 1; ao Miguel Alves, Mariana Vieira, e Wolfgang Lind, que colaboraram na recolha de dados para o Estudo 2; ao David Van der Kellen, Ludmila Nunes, e Fátima Bernardo, pela assistência na

programação e condução do Estudo 3; ao Prof. Mário Ferreira, por ter analisado e incentivado uma versão inicial do Estudo 4, ao Rui de Carvalho, pela assistência na sua programação, *to Noemi Bobadilla, Alexis Roldan, and Coral Bruni, for their assistance and support, and to Peter Matsos, for his collaboration with data collection*.

Agradeço também aos amigos. Tanto por estarem presentes como por compreenderem a minha ausência. Em especial, à Ariana e ao David, à Cláudia e ao César, à Cristina e ao Santi, e à Joana e ao André.

Obrigada família. Ao meu pai, pela força. À minha mãe, pela perseverança. À Teresa, ao Vasco, e à Carolina, pelas aventuras e emoções. À Raquel e ao Pedro, pelos momentos *g'vine*. À Nônô, por gostar muito da madrinha, mesmo que a madrinha lhe falhe os aniversários. Aos avôs Ilda, Carlos e Olinda por me terem ensinado a relatividade das questões. A escolha entre carro e autocarro é recente, antes ia-se a pé – até para os casamentos! À Céu, ao Carlos e ao Guilherme, por me darem a conhecer a família Rocha Alves.

Ao Miguel, que me tem acompanhado incondicionalmente ao longo deste percurso.

Tese de doutoramento apoiada pela Fundação para a Ciência e Tecnologia, no âmbito do III Quadro Comunitário de Apoio, comparticipado pelo Fundo Social Europeu e por fundos nacionais do Ministério da Ciência, Tecnologia e Ensino Superior.

Bolsa de Doutoramento - Referência Nº. SFRH / BD / 27259 / 2006

DECLARAÇÃO

De acordo com o artigo 41º do Regulamento de Estudos Pós-Graduados da Universidade de Lisboa, aprovado pela Deliberação da Reitoria nº 1506/2006, esta dissertação engloba artigos científicos submetidos para publicação em revistas em colaboração com outros autores. Declaro que fui responsável pela recolha, análise e interpretação de dados, e pela redacção, submissão e revisão dos manuscritos dos artigos enviados para publicação.

Sílvia Coelho Ribeiro Fernandes Luís

Abril de 2011

Resumo

A influência das normas no julgamento e comportamento dos indivíduos é um tema desde há muito estudado pelos psicólogos sociais (e.g., Asch, 1955; Cialdini, Reno, & Kallgren, 1990; Deutsch & Gerard, 1955; Jacobson, Mortensen, & Cialdini, 2011; Schwartz, 1977; Sherif, 1936; Terry & Hogg, 1996). A relevância da influência normativa deriva não só da sua relevância teórica mas também do seu potencial de aplicação na promoção do comportamento pro-social em diversos âmbitos. Não obstante, existem problemas teóricos fundamentais que ainda não foram resolvidos. Nesta dissertação focámos a conceptualização da influência normativa, que tem sido frequentemente apontada como insuficiente (e.g., Armitage & Conner, 2001), e a lacuna de investigação no âmbito das propriedades do conhecimento normativo. Em particular, explorámos se (a) um quadro conceptual integrativo dos vários tipos de normas que têm sido identificados na literatura capturaria melhor a influência normativa no comportamento e se (b) o conhecimento normativo seguiria os princípios gerais de activação e uso do conhecimento.

O objectivo fundamental desta dissertação era, pois, contribuir para o desenvolvimento teórico da influência normativa. Para o alcançar conduzimos quatro estudos em temas distintos: problemas ambientais, proibição de fumar, formação de impressões, e preferências alimentares. Esta diversidade permitiu-nos simultaneamente explorar a influência normativa em temas com diferentes implicações sociais e que envolvem distintos factores.

O Estudo 1 (*Quadro conceptual integrativo da influência normativa: Compreensão do comportamento pró-ambiental*) teve como objectivo explorar a viabilidade e utilidade dum quadro conceptual integrativo da influência normativa na

explicação do comportamento. Utilizámos uma abordagem de investigação descritiva, em particular realizamos um estudo correlacional de inquérito por questionário (N = 114). Foram medidos os vários tipos de normas que integram o quadro conceptual: normas pessoais (Schwartz, 1977) e normas sociais do tipo sociocultural (Pepitone, 1976), subjectivo (Fishbein & Azjen, 1975), e referente (e.g., Hogg & Turner, 1987), distinguindo-se ainda entre a natureza descritiva e injuntiva (Cialdini et al., 1990) dos vários tipos de normas sociais. Estas crenças normativas foram medidas em três classes de comportamentos pró-ambientais: reciclagem, uso de transportes públicos e compra de produtos biológicos.

A análise de resultados evidenciou que as variáveis do quadro conceptual integrativo explicavam uma quantidade considerável da variabilidade dos comportamentos pró-ambientais, encorajando a utilização deste quadro conceptual. Os resultados suportaram ainda a possibilidade da quantidade de variabilidade explicada depender da eficácia da influência normativa. Atendendo a que, em média, os comportamentos pró-ambientais são infrequentes, a influência normativa tinha sido considerada mais eficaz quando as crenças normativas social injuntivas e pessoais eram elevadas. Tal como esperado, no comportamento onde se verificou uma maior eficácia normativa (reciclagem), as variáveis normativas explicaram uma quantidade de variabilidade comportamental superior ao comportamento onde se verificou a menor eficácia normativa (uso de transportes públicos). As normas podem promover eficazmente o comportamento pró-ambiental. "Basta" que nós acreditemos.

O Estudo 2 (*É proibido fumar em locais públicos: Mudança de crenças normativas*) teve como objectivo ilustrar a mudança nas crenças normativas relativas a não fumar em locais públicos com a implementação duma lei proibitiva de fumar em locais públicos. Este estudo foi um experimento natural, o estímulo que terá

desencadeado a mudança não foi controlado pelos investigadores. Recolheram-se medidas normativas, tendo por base o quadro conceptual integrativo, através dum inquérito por questionário (N = 204). O questionário foi aplicado em três momentos: um mês antes, seis meses após, e um ano após a implementação da lei, aproximadamente.

A análise de resultados ilustrou que as crenças normativas que aumentaram com maior magnitude foram as socioculturais (descritivas e injuntivas) e as subjectivas descritivas. A utilização do quadro conceptual integrativo permitiu-nos ilustrar e diferenciar as implicações da implementação da lei nas várias medidas normativas. Medidas normativas relativas a estar em silêncio na biblioteca que foram simultaneamente recolhidas não divergiram ao longo do tempo, suportando indirectamente o facto de que o aumento das medidas normativas se relacionava com a implementação da lei.

Importa referir que pouca investigação tem ilustrado o efeito das leis nas crenças normativas. A compreensão destes efeitos pode ser crucial para o cumprimento das leis. As leis não conseguem alcançar grande parte da vida quotidiana. As normas conseguem.

O Estudo 3 (*Acessibilidade e aplicabilidade percebida do conhecimento normativo*) teve como objectivo explorar a acessibilidade e a aplicabilidade percebida do conhecimento normativo relativo a traços de personalidade (concretamente, de crenças normativas sócio-culturais descritivas) e o seu uso no julgamento. Utilizámos uma abordagem de investigação experimental. Em particular, adaptámos a experiência clássica de Higgins, Rholes e Jones (1977), dos efeitos de *priming* em impressão de formações, adicionando uma condição de julgamento com aplicabilidade percebida normativa (N = 144). Este estudo tinha evidenciado, pela primeira vez, como a experiência recente dum indivíduo podia influenciar, de forma não intencional e passiva, o julgamento dos comportamentos ambíguos de outra pessoa. Para explorar

como a experiência normativa mais frequente poderia influenciar o julgamento, adaptámos ainda uma técnica utilizada por Fazio e Williams (1986), baseada no tempo de reacção, para medir a acessibilidade crónica do conhecimento normativo relativo a traços de personalidade.

Globalmente, os resultados evidenciaram que os indivíduos utilizaram traços de personalidade que tinham sido recentemente *primados* em julgamentos com aplicabilidade percebida normativa e que diferenças na acessibilidade crónica do conhecimento normativo se relacionavam com o seu uso, mas apenas quando as tarefas tinham aplicabilidade percebida normativa.

Estes resultados sugerem que o estudo das propriedades do conhecimento normativo é relevante e poderá ser importante para compreender o comportamento.

O Estudo 4 (*É seu? Medição implícita das crenças normativas*) teve como objectivo explorar a viabilidade e utilidade de medir o conhecimento normativo implicitamente adaptando o Teste de Associações Implícitas (TAI, Greenwald, McGhee, & Schwartz, 1998). Escolhemos o TAI devido aos seus bons resultados de validade, facilidade de administração e produção de efeitos robustos (e.g., Greenwald, Poehlman, Uhlmann, & Banaji, 2009). Utilizamos uma abordagem experimental.

Têm vindo a acumular-se evidências do envolvimento de processos automáticos na influência normativa. Por exemplo, verificou-se que o conhecimento normativo se pode activar para influenciar o comportamento sem a intenção ou consciência do indivíduo (e.g., Aarts & Dijksterhuis, 2003; Joly & Stapel, 2008). Uma vez que a utilização de medidas explícitas enfatiza a intencionalidade e promove a utilização de processos deliberados, interessa utilizar medidas implícitas para compreender a influência normativa.

O TAI foi adaptado para medir as preferências normativas implícitas relativas a maçãs e chocolates (normas sócio-culturais injuntivas). Resultados iniciais evidenciaram que esta medida tinha precisão e consistência interna (N = 83). Posteriormente, verificou-se também que o TAI previa a intenção de escolha entre maçãs ou chocolates, demonstrando a sua validade preditiva (N = 148). Assim, a utilização duma versão normativa do TAI poderá contribuir para a compreensão da influência normativa no comportamento.

Em suma, os resultados dos estudos sugerem que (a) um quadro conceptual integrativo poderá capturar aprazivelmente a influência normativa no comportamento e (b) ilustrar a forma como as mudanças sociais ocorrem. Sugerem também que (c) a activação e uso do conhecimento normativo seguem, em parte, os princípios gerais de activação e uso do conhecimento, podendo ter propriedades diferenciadoras, e que (d) a influência normativa envolve processos cognitivos automáticos, interessando combinar medidas normativas do tipo explícito e implícito para compreender a influência das normas no comportamento. Referimos ainda que emergiram efeitos normativos nos diferentes temas, o que sugere a potencial vastidão da influência normativa.

Palavras-chave: crenças normativas, comportamento, activação e uso de conhecimento, Teste de Associações Implícitas (TAI).

Referências

Aarts, H., & Dijksterhuis, A. (2003). The silence of the library: Environment, situational norm, and social behavior. *Journal of Personality and Social Psychology, 84*, 18–28.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic review. *British Journal of Social Psychology, 40*, 471–499.

Asch, S. E. (1955). Opinions and social pressure. *Scientific American*, *193*, 31–35.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58,* 1015–1026.

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influence upon individual judgment. *Journal of Abnormal and Social Psychology*, *51*, 629–63.

Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude-perception and attitude-behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology, 51*, 505–514.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: the Implicit Association Test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Greenwald, A. G., Poehlman, T. A., Uhlmann, E., & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology, 97*, 17–41.

Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology, 13*, 141–154.

Hogg, M. A., & Turner, J. C. (1987). Social identity and conformity: A theory of referent informational influence. In W. Doise & S. Moscovici (Eds.), *Current issues in European social psychology* (Vol. 2, pp. 139 – 182). New York: Cambridge University Press.

Jacobson, R. P., Mortensen, C. R., & Cialdini, R. B. (2011). Bodies obliged and unbound: Differentiated response tendencies for injunctive and descriptive social norms. *Journal of Personality and Social Psychology*, *100*, 433–448.

Joly, J. E, & Stapel, D. A. (2008). Staff, miter, book, share: How attributes of Saint Nicholas induce normative behavior. *European Journal of Social Psychology, 34*, 1047–1056.

Pepitone, A. (1976). Toward a normative and comparative biocultural social psychology. *Journal of Personality and Social Psychology*, *34*, 641–653.

Schwartz, S. H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 221–279). San Diego, CA: Academic Press.

Sherif, M. (1936). *The psychology of social norms*. New York: Harper.

Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude–behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin*, *8*, 776–793.

Abstract

Despite all the investigation that has been conducted in normative influence there are still some fundamental theoretical problems that remain unsolved. We have focused on normative influence conceptualization, which has often been pointed out as being insufficient, and on the lack of research on the properties of normative knowledge. In particular, we explored as to whether (a) an integrative framework would better capture normative influence and (b) normative knowledge followed the same principles of activation and use as other types of knowledge.

Four studies were conducted in distinct themes: environmental problems, smoking prohibition, impression formation and food preferences. Theme choice had its own theoretical relevance. Such diversity has allowed us to simultaneously explore if normative influence would operate in contents involving a different array of factors.

Studies' results have evidenced that using an integrative framework of normative influence we could account for greater amounts of behavior variability that those generally accounted for (Study 1). The use of the integrative framework in a natural experiment has also allowed us to illustrate how normative variables have changed after a smoking in public places ban (Study 2). Exploring normative knowledge principles of activation and use we have demonstrated, through an experimental study, that variations in the accessibility of normative knowledge towards personality traits were related to its use in judgments with normative judged usability (Study 3). Furthermore, a normative version of the Implicit Association Test adequately measured implicit normative preferences towards apples versus candy bars and predicted intentional choice, sustaining the involvement of automatic processes in normative influence in behavior (Study 4).

Taken together, these studies have provided support for the use of an integrative framework of normative influence and for a stronger investment in normative knowledge activation and use research. Theoretical implications, practical considerations, and future avenues are discussed throughout the dissertation.

Keywords: normative beliefs; behavior; knowledge activation and use; Implicit Association Test (IAT).

CONTENT INDEX

TABLE INDEX

Study 1) Integrative Framework of Normative Influence: Understanding Proenvironmental Behavior

Study 2) No Smoking in Public Places: Normative Beliefs Change

Study 3) Normative Knowledge Accessibility and Judged Usability

Study 4) Is It Yours? Implicit Measurement of Normative Beliefs

FIGURE INDEX

Normative Influence on Judgment and Behavior

Introduction

"*Men have before hired bravos to transact their crimes, while their own person and reputation sat under shelter. I was the first that ever did so for his pleasures. I was the first that could thus plod in the public eye with a load of genial respectability, and in a moment, like a schoolboy, strip off these lendings and spring headlong into the sea of liberty. But for me, in my impenetrable mantle, the safety was complete. Think of it -- I did not even exist! Let me but escape into my laboratory door, give me but a second or two to mix and swallow the draught that I had always standing ready; and whatever he had done, Edward Hyde would pass away like the stain of breath upon a mirror; and there in his stead, quietly at home, trimming the midnight lamp in his study, a man who could afford to laugh at suspicion, would be Henry Jekyll*" (Stevenson , 1979, p. 86).

Strange Case of Dr. Jekyll and Mr. Hyde, by Robert Louis Stevenson, originally published in 1886, reflected a duality of human nature that has often been associated to the heavy social expectations placed on individuals. As Mr. Hyde, Dr. Jekyll could live out his socially inappropriate fantasies without consequences. Nonetheless, this ability ultimately consumed Dr. Jekyll. In the end, social duties and obligations were not negotiable.

Most contemporary societies are far from the strict and explicit Victorian notions of society and morality. Nowadays, normative influence has quite different contents. Yet its effects remain quite the same: guiding individual's attitudes, beliefs and behaviors. Dr. Jekyll's conflict between pleasure and public-eye respectability seems to be timeless.

The study of social forces has interested many social psychologists. Importance of normative influence flows from psychological theories to several applied fields, such as environmental problems, public health issues, or general prosocial behavior. Despite all the investigation that has been conducted in normative influence there are still some fundamental theoretical problems that remain unsolved. We have focused on normative influence conceptualization, which has often been pointed out as being insufficient, and on the lack of research on the properties of normative knowledge. In particular, we explored as to whether (a) an integrative framework would better capture normative influence and (b) if normative knowledge followed the same principles of activation and use as other types of knowledge.

In sum, this dissertation's general purpose was to contribute to the theoretical development of normative influence. We conducted four studies in quite distinct themes: environmental problems, smoking prohibition, impression formation and food preferences. Theme choice had its own theoretical relevance. Such diversity has allowed

us to simultaneously explore if normative influence would operate in contents that probably had diverse social implications and involved a different array of factors. For instance, environmental problems and smoking in public places were intuitively expected to be more exposed to normative influence than impression formation and food choices. Therefore, this research simultaneously allowed exploring whether or not, and how, norms apply to the different chosen themes that, in themselves, are theoretically significant.

Norms Background

The study of norms and the processes underlying its activation and use is fundamental to the understanding of human behavior. Sherif (1936), based on the remarkable results of his studies, has long foreseen that norms would be a central concept in social influence and social psychology. However, psychologists needed more than 50 years to recognize how relevant social norms could be. It was necessary to unravel relevant research questions and design methodologies which allowed for a meaningful research. In fact, the social norms concept was seriously questioned in the past. It was argued that the concept was useless, general and difficult to submit to empirical testing. Darley and Latané (1970), for instance, questioned the explanatory usefulness of norms (in particular values) in understanding behavior, in particular helping behavior, on the grounds that the situational rewards and costs affecting the individual appear to account for the observed behavior. Krebs (1970) reviewed literature on altruism and suggested that the normative level of analysis was appropriate to sociological theory but did not contribute to the understanding of psychological processes. Normative explanations were accused of being tautological and circular: any particular behavior could be predicted, or explained, on the basis of a norm that could

possibly act in a situation. Staub (1972) also stressed that each situation could involve a multiplicity of norms, being necessary to understand which norm was responsible for a particular behavior, as well as distinguishing between knowing and personally accepting a norm. Furthermore, research has consistently demonstrated that norms (specifically subjective norms) were the weakest predictors in models of behavior and behavior intentions, suggesting their lesser importance in guiding behavior. As a result, several authors have even removed normative predictors from their analyses (see Armitage & Conner, 2001).

These criticisms were a reflection of two serious problems: the conceptualization of norms and the lack of understanding of the psychological processes through which they operated. In the 1990s, Cialdini and colleagues' (e.g., Cialdini, Kallgren, & Reno, 1991; Cialdini, Reno, & Kallgren, 1990) focus theory of normative conduct provided basic insights to address these problems. This theory introduced key conceptual refinements that allowed for explaining why and how norms influence individual behavior. As a result, in the last two decades, social norms influence on different types of behavior has been widely demonstrated. Social norms seem to have been redeemed and are finally assuming the place predicted by Sherif in 1936.

The Focus Theory of Normative Conduct

The development of the focus theory of normative conduct was largely responsible for the regained attention to the social norms construct. This theory was quite parsimonious. With only two main assumptions, Cialdini and colleagues planted the seeds for a remarkable development in normative research.

Descriptive and injunctive norms. A basic assumption of this theory was that the term *norm* has often been used to refer to different types of social influence

indiscriminately (informative and normative influence), compromising its conceptualization (see Shaffer, 1983). Social psychologists have long distinguished between informational social influence, an influence to accept information obtained from another as evidence about reality, and normative social influence, an influence to conform to the positive expectations of another (e.g., Deutsch & Gerard, 1955). Commonly, these two types of influence operate together. People tend to do what is typical as well as what is socially approved. However, they relate to different human goals and have unique effects on behavior. Understanding how each type of influence operates to influence cognition and behavior has been a question of utmost research interest (e.g., Cialdini et al, 1990).

Cialdini and colleagues improved the conceptualization of norms by distinguishing between (a) descriptive norms, which fundamentally flowed from informational influence and referred to the perceived prevalence or typicality of a given belief or behavior by the individual; and (b) injunctive norms, which fundamentally flowed from normative influence and referred to the perceived degree of social approval/disapproval of the belief or behavior by the individual. Therefore, it was assumed that normative behavior occurred because each norm was particularly related to a fundamental human goal: accuracy (descriptive norms) and social approval (injunctive norms).

Individuals are motivated to achieve their goals in the most effective and rewarding way. Therefore, they need to interpret reality correctly and respond to incoming information (Cialdini & Goldstein, 2004). One source of evidence individuals use to maximize the effectiveness of their behavior is the descriptive norm operating in the situation (e.g., Cialdini et al., 1990; Cialdini & Trost, 1998).

Individuals are most likely to use the evidence of others's behavior in order to decide the most effective course of action when the situation is new, ambiguous, or uncertain (Deutsch & Gerard, 1955; Sherif, 1936). Sherif's (1936) classical experiment using the autokinetic effect was a laboratory illustration of how informative social influence can occur and norms emerge. This effect referred to the previous discovery that a small unmoving light in a dark room often appears to be moving. Sherif used this illusion to ask participants to estimate how far such pinpoint of light moved. Of importance, individuals were being asked to make an estimate towards something with no physical reality and on which they could not have prior knowledge, allowing for the study of norm development. Initially Sherif studied how participants reacted to the autokinetic effect when they were in a room by themselves. Given several trials in which to judge the movement of the light, individuals progressively established their own individual norms for the judgment. In the following phase of the experiment, groups of participants were asked to estimate how far the pinpoint of light moved in the dark room. Results evidenced participants progressively changed their estimates over trials to one that resembled other people's estimates. Individuals created consistent group norms for the judgment of a movement without psychical reality. As Festinger argued (1950), where no physical reality basis exists for the establishment of the validity of one's belief, one is dependent upon the beliefs of others.

Individuals are also motivated to create and maintain meaningful social relationships with others. Individuals avoid acting in ways that will lead to social punishment or disapproval, and use approval cues to help them build, maintain, and measure the quality of relationships with others (Cialdini & Goldstein, 2004). Injunctive norms provide particularly relevant information for this affiliation or social approval goal. Reflecting about the *Strange Case of Dr. Jekyll and Mr. Hyde*, the strength of this

type of motivation would have been what led the respectable Dr. Jekyll to create the hideous Mr. Hyde.

Asch's (1955) experiment on normative influence became famous for demonstrating how individuals can be pressured into unusual behavior by the consensus around them. His experiment was quite simple. Eight participants were seated around a table, with the seating plan designed to maximize group pressure. All participants were confederates except one. Each participant was asked out loud to match 1 out of 3 lines of different lengths with a reference line. Confederates had been previously tutored to give certain responses. The length of the three lines was very different and, as such, to answer correctly was quite simple. Contrarily to Sherif's experiment, here individuals were asked questions towards stimuli with physical reality and objective correct and incorrect answers. Results evidenced that, when surrounded by people providing an incorrect answer, over one third of the participants also gave an incorrect answer. This suggested that individuals inferred that the socially appropriate answer was the one given by most participants.

A third fundamental motivation in social influence has been distinguished: the motivation to maintain a favorable self-concept. This motivation, although extremely relevant, was not directly addressed in the focus theory of normative conduct. Therefore, we will review it when distinguishing between the different sources of normative influence.

The focus theory of normative conduct emphasis in goal-directed behavior was of utmost importance. It was in line with the sociocognitive approach in which the individual's goals influence information processing, judgment, decision making, and behavior, either explicitly or implicitly. For simplicity and clarity purposes, researchers have related specific types of influence and their derived norms with a main motivation.

Nonetheless, it should be noted that individuals' behaviors often serve various goals (see Cialdini &Goldstein, 2004; Cialdini & Trost, 1998).

Norms activation. A second fundamental assumption of focus theory of normative conduct is that descriptive or injunctive norms will affect behavior primarily when they are activated. Individuals who are dispositionally (e.g., strong personal endorsement of a norm) or temporarily (e.g., message framing, contextual salience) focused on normative considerations are most likely to act normatively. Therefore, norms should not be seen as being uniformly in force at all times and situations. This assumption expunged the tautological or circular nature traditionally associated with normative explanations. It was closely related to sociocognitive principles of knowledge activation, as we will discuss further ahead.

A substantial body of field research has supported the different behavioral effects of norm salience in different behaviors, such as littering (Cialdini et al., 1991; Cialdini et al., 1990; Kallgren, Reno, & Cialdini, 2000; Reno, Cialdini, & Kallgren, 1993), recycling (Schultz, 1999), energy conservation (Goldstein, Cialdini, & Griskevicius, 2008; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007), or alcohol consumption (Borsari & Carey, 2003). Recent investigations have also been analyzing if individuals have different responses to descriptive and injunctive norms, in particular cognitive, affective, and self-regulatory response processes (see Jacobson, Mortensen, & Cialdini, 2011). Results support the argument that descriptive and injunctive norms are associated with differentiated response tendencies that reflect their basic social functions and motivations: being accurate and being approved by others.

A limitation of the focus theory of normative conduct is not distinguishing between the relative weights of normative sources. Although we believed such distinction may be implicit in the concept of norm salience (i.e., in equal conditions the

most important sources of influence should have a higher subjective salience) we found important to elaborate further on this point.

Normative Influence Sources

Several sources of normative influence have been indeed identified and distinguished. We will organize this review based on specific types of norms that have been related to these sources: sociocultural norms, subjective norms, referent norms, and personal norms. For a complementary framework see Miller and Prentice (1996).

Sociocultural norms. Norms can include general sociocultural expectations towards the individual's beliefs and behaviors. This type of norm was designated as sociocultural norm. Pepitone (1976) argued that it was necessary to frame social psychology normatively in order to comprehend the individual's behavior. The individual's behavior was defined as normative in the sense that it was more characteristic of definable groups, organizations, and other sociocultural units than of randomly observed individuals. Theoretically, the basic sources of such normative social behavior were values, beliefs, and other conceptual dynamics that originated in, and were maintained by, the collective entities of which individuals constitute interdependent parts. We believed that the general nature of this type of norms can make it especially adequate for researching on the strong normative effects that affect society as a whole, for instance those related with gender, age or global social phenomena, and for cross-cultural type studies.

Subjective norms. Norms can also include expectations of specific others. Fishbein and Azjen (1975), in their theory of planned behavior, defined subjective norms as those beliefs concerning the expectations of most people who, for a variety of reasons, might be important to the individuals. Subjective norms described the amount

of pressure that people perceive being under from significant others to act in a certain way. Using Cialdini et al.'s (1990) terms, the subjective norm would be an injunctive norm type. Many researchers have relied on the subjective norm to have a measure of social influence and of its influence on behavior. However, studies have consistently suggested that the predictive ability of the subjective norm construct is limited. For instance, Armitage and Conner's (2001) meta-analysis found that the average component-relationship between subjective norms and intentions was roughly half the size of the relationship between attitudes, another predictor of the model, and intentions. Considering that it seemed unlikely that the majority of people's behavior was unaffected by social pressure, researchers suggested that such a conceptualization was probably not adequate or sufficient to capture social influence mechanisms. We shared this opinion.

Referent norms. Norms can furthermore include expectations of others whom one identifies with. Within social identity approach, the self-categorization theory (e.g., Hogg & Turner, 1987; Terry & Hogg, 1996; Terry, Hogg, & White, 2000) has refined the importance of specific others. Individuals differ in the strength of their identification with significant others or groups. The more they identify with, the more relevant norms become. This type of influence can be very strong and relies on particular psychological processes. Individuals do not embrace such norms for social approval or to validate reality. Individuals embrace them because they want to feel they belong, psychologically, to that group, or that they are like that particular person. Therefore, this influence has been distinguished from informative and normative influences and is thus designated as the referent informational influence. It is usually associated to the goal of maintaining a positive self-concept (e.g., Cialdini et al., 1990; Cialdini & Trost, 1998). Individuals need to evaluate themselves in a positive way and feel good about who they

are. Identifying with individuals or groups with perceived positive qualities makes it possible. Categorizing oneself as being similar to a particular individual or a group member transforms one's self-concept and concomitant attitudes, feelings, beliefs and behaviors, such that they are consistent with the identification target. Referent norms are inextricable properties of social groups and proscribe group's beliefs, attitudes, and behaviors. It has been demonstrated, both in field and experimental studies, that individuals' behavior and expressed attitudes were dependent on perceptions of support, for that behavior or attitude, from a salient and important reference group. For instance, Terry and Hogg (1996) found that the perceived norms of a behaviorally relevant reference group (friends and peers at a university) predicted intentions to engage in norm-related behavior, but only for people who identified strongly with the group. Furthermore, there was evidence that engagement in behaviors consistent with previously stated attitudes also depended on perceptions of support, for that attitude, from a salient and important reference group (e.g., Wellen, Hogg, & Terry, 1998).

Personal norms. Sociocultural, subjective, and referent sources of normative influence are social. For this reason these norms can be generally labeled as social norms. Not all sources of normative influence are external to the individual. The self is yet another important source of influence. Schwartz's (1977) model of normative influences on altruism proposes that individuals have personal norms. These are self-expectations that might flow from social norms and values that become internalized. Personal norms are experienced as feelings of moral obligation and, like referent norms, motivate behavior by the goal of enhancing or preserving the individual's sense of self-worth and avoiding self-concept distress. Personal norms become activated when individuals are aware of the consequences of not acting in accordance with norms, and when individuals feel responsible for the consequences of not acting normatively (see

De Groot & Steg, 2009). This model has been successfully applied in predicting a diversity of prosocial intentions and behaviors. For instance, donating bone marrow and helping in emergencies (see Schwartz, 1977), volunteering (Schwartz & Fleishman, 1982), conserving energy (Black, Stern, & Elworth, 1985), recycling (Bratt, 1999) and general proenvironmental behavior (Schultz et al., 2005).

Further ahead we will integrate Cialdini and colleagues' descriptive and injunctive norms with these norms.

Psychological Processes Underlying Norms Activation and Use

One of the criticisms that pointed out to normative explanations was its circularity. A variety of norms could apply to any specific situation, and any behavior could be attributed to the normative construct. The focus theory of normative conduct solved this problem with the postulates of norm salience and norm activation. Field studies demonstrated that the contextual manipulation of specific norms was related to normative behavior. Norms primarily direct behavior when they are made salient or otherwise focused on (e.g., Cialdini et al., 1991; Cialdini et al., 1990; Kallgren et al., 2000; Reno et al., 1993).

In line with this postulate of salience, we believed that using a sociocognitive approach could further benefit the understanding of norms activation and use. Harvey and Enzle (1981) had already highlighted the potential importance of a cognitive model for explaining normative behaviors. They successfully applied the spreading activation theory of semantic memory (Collins & Loftus, 1975) to normative knowledge and suggested that social norms were represented within a knowledge structure in memory. More recently, the activation and use of normative knowledge is regaining research attention. Norms were found capable of becoming activated on the mere presence of

environmental features related to its content. People's behavior (e.g., Cialdini et al., 1990), or people's mere presence (e.g., Baldwin, Carrel, & Lopez; 1990; Stapel, Joly, & Lindenberg, 2010), specific environments (e.g., Aarts & Dijksterhuis, 2003), norm-related symbols (Joly & Stapel, 2008) and norm-related words (e.g. Epley & Gilovich, 1999), were found to activate social norms. This activation, in turn, has proven to influence cognitions (e.g., Baldwin, et al., 1990; Epley & Gilovich, 1999; Stapel, et al., 2010), goals (e.g., Fitzsimons & Bargh, 2003; Shah, 2003), and behaviors (e.g., Aarts & Dijksterhuis, 2003; Cialdini, et al., 1990; Joly & Stapel, 2008).

The study of automaticity in normative influence and the implicit measurement of normative beliefs also seemed particularly relevant. Experimental studies evidenced that normative behavior did not always occurred intentionally and consciously. Norms may be automatically activated by specific environments to influence individuals' behavior without the individuals' necessary intent, awareness, control or effort (see Aarts & Dijksterhuis, 2003). This implies that researchers cannot assume individuals are always fully aware of or can retrieve the reasons behind their behavior. And, indeed, there were findings of implicit normative measures explaining behavior better than explicit measures (Rhodes & Ewoldsen, 2009). In line with such evidence, we highlight the importance of investigating normative influence by combining explicit and implicit measures.

The Present Research Program

"*With every day, and from both sides of my intelligence, the moral and the intellectual, I thus drew steadily nearer to that truth, by whose partial discovery I have been doomed to such a dreadful shipwreck: that man is not truly one, but truly two. I say two, because the state of my own knowledge does not pass beyond that point. Others will follow, others will outstrip me on the same lines; and I hazard the guess that man will be ultimately known for a mere polity of multifarious, incongruous and independent denizens*" (Stevenson , 1979, p. 82).

Individual actions and beliefs are sustained by several and different driving forces. They are also dependent on the principles of normative knowledge activation and use. Stevenson's novel was dramatically focused on the individual's potential for actions of extreme good and evil. It might not be necessary to go that far. Even in regular and irrelevant everyday actions we will probably find reflections of *"a mere polity of multifarious, incongruous and independent denizens"*, *"not truly one"*.

Norms Conceptualization

Most contemporary researchers would agree that norms are basically knowledge structures containing standards for attitudes, beliefs, and behaviors (e.g., Joly & Stapel, 2008). These norms are constructed throughout inferential and selective processes (Miller & Prentice, 1996). Individuals have to infer and mentally represent others' thoughts, feelings and behaviors. Inferences can be made based on observable behavior, direct or indirect communication, and, in the absence of these, on the individual's owns thoughts, feelings and behaviors. As we have previously discussed, other people's influence does not have equal weight. For instance, other people exert the more influence the more they are similar to the individual, share an important category membership, are reference others, or enhance the self.

A fundamental problem in norms research was that its conceptualization was often pointed out as insufficient in capturing normative influence in behavior (see Armitage & Conner, 2001). To better understand normative influence, we used an integrative framework of norms taking in account social and personal norms and combining the various motivations that sustain social norms.

In what concerns social norms, following a long tradition in social psychology (e.g., Deutsch & Gerard, 1955), which was also maintained on the focus theory of normative conduct (e.g., Cialdini et al., 1991; Cialdini et al., 1990), and has kept on being developed (e.g., Jacobson et al., 2011), we assumed these should be primarily distinguished as either descriptive or injunctive. In addition, we also took into account the relative importance other people can have in different norms. Concretely, we have further differentiated between the socio-cultural, subjective and referent characters of descriptive and injunctive norms. In other words, we were distinguishing between what most others, important others and others whom one identifies with did and approved of

doing. Although different psychological processes and motivations have been related to these social norms, we argued that these are not incompatible with descriptive and injunctive norms related processes and motivations. The individual's behaviors and beliefs are not expected to be reflecting a single process or motivation (Cialdini & Goldstein, 2004; Cialdini & Trost, 1998). We believed that acknowledging that several social motivations might be reflected in a normative measure can improve the measure's ability to capture normative influence.

In what concerns personal norms, we have followed on Schwartz's (1977) norm activation model, that has so far been used and keeps on being refined (see De Groot & Steg, 2009), and assumed these were mostly experienced as feelings of moral obligation. Figure 1 illustrates this integrative framework.

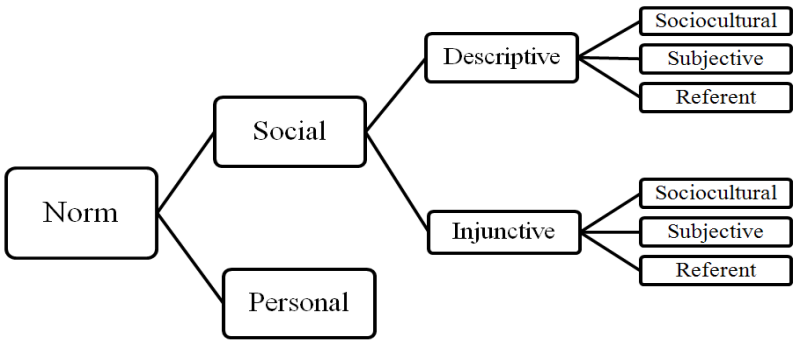


Figure 1. Integrative framework of normative influence.

As far as we know, researchers have not explicitly conceptualized normative influences in such an integrative fashion. Based on this framework, different levels of normative composite measures could be used. For example, one could have a measure of general norms, of social norms, of social descriptive norms, or of injunctive referent norms. It would depend on the purposes of the research and on the specific content of the norm under study. For instance, some social problems are related to the fact that not everything that should be done is actually done. Individuals should use public transports

but most people do not. In such cases, neither would the researcher be interested in creating composite measures of social norms, nor would these measures be reliable.

Normative Knowledge Activation and Use

Normative knowledge structures can contain an array of information, including behaviors, evaluations, beliefs and certain individuals or groups. Understanding how and when this knowledge is used was found most relevant in this research program.

Sociocognitive psychologists have been seeking to identify the principles that underlie knowledge structure activation and use for a long time. Its importance relies on the fact that categorization, explanation and response to events imply activation and use of stored knowledge. For instance, Bruner (1957) has argued that the nature of perceptual readiness relied on categories' accessibility and found evidence that it was a function of the likelihood of occurrence of previously learned events and of one's need states and habits of one's particular daily life.

The most systematic and inclusive conceptual framework to explain how and when knowledge was activated and used was proposed by Higgins (1996). He focused on the distinctive features of accessibility, applicability and salience to consider the nature and consequences of knowledge activation. Knowledge activation frequently occurs automatically, without individual's effort, intention, control or awareness (see Bargh, 1996). The role played by judged usability, automaticity and expectancies was also taken in account to determine whether activated knowledge would or not be used. These variables are interrelated and may influence attention, memory, feelings, and, most important for this dissertation, judgment and behavior. We extended Higgins (1996) framework to explore the activation and use of specific types of knowledge, such

as norms, attitudes, or values, among others. Figure 2 summarizes the variables integrated in his framework.

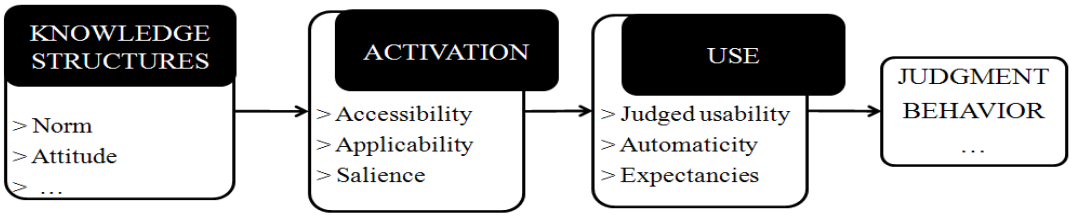


Figure 2. Variables that influence knowledge structures activation and use.

This framework has served as a general guide for this dissertation's research questions concerning normative knowledge. With the exception of salience, that was a fundamental postulate of the focus theory of normative conduct, researchers have only recently started investigating the properties of normative knowledge activation and use in behavior (e.g., Aarts & Dijksterhuis, 2003; Joly & Stapel, 2008). A large part of this process is yet to be investigated.

Studies Overview

Four studies were conducted. Whereas Studies 1 and 2 mainly addressed normative conceptualization research questions, Study 3 e 4 addressed those concerning normative knowledge activation and use.

Study 1) Integrative framework of normative influence: Understanding proenvironmental behavior. Based on the idea that an integrative framework of norms would contribute to a better understanding of normative influence, several types of normative beliefs were analyzed in three classes of proenvironmental behaviors.

Our main expectations were that these framework variables would account for a considerable amount of behavior variability, being dependent on the effectiveness of normative influence. Considering the average infrequency of proenvironmental behaviors, normative influence was considered most effective in promoting it when both injunctive and personal normative beliefs were strong. In addition, injunctive beliefs moderation of the relationship between descriptive type beliefs and behavior was also tested for the three proenvironmental behaviors.

Methodology. One-hundred and fourteen university students (70 females, ages ranging from to 18 to 48) participated in a survey. The questionnaire was composed by several statements regarding behavior and norms towards recycling, public transport use, and organic food purchase. Item-construction rationale followed on previous research on social norms and behavioral models (e.g., Cialdini et al., 1990; Fishbein & Ajzen, 1975; Schwartz, 1977; Hogg & Turner, 1987). Respondents were generally asked to rate the affirmations on a 7- point scale.

Keywords. Social normative beliefs; personal normative beliefs; proenvironmental behavior.

Study 2) No Smoking in Public Places: Normative Beliefs Change. This study was a natural experiment which explored if and how implementing a smoking ban in public places affected different types of normative beliefs. An understanding of the effects of laws on normative beliefs might be crucial for effective regulatory policy. Laws cannot reach a large part of everyday life, norms can. Several measures were collected during the period such law was enforced in Portugal, in three distinct times. The focus theory of normative conduct (e.g., Cialdini et al., 1990) was used to predict what types of norms were most likely to change.

Methodology. Two-hundred and four university students participated in the survey. One-hundred and three respondents were male, age of respondents ranging from to 17 to 57. Sixty-nine participants responded on Time 1, 67 participants responded on Time 2, and 65 participants responded on Time 3. The questionnaire was composed by several statements regarding social norms, attitudes and behavior towards silence in the library and no smoking in public places. Item-construction rationale followed on previous research on social norms and behavioral models (e.g., Cialdini et al., 1990; Fishbein & Ajzen, 1975; Schwartz, 1977; Hogg & Turner, 1987). Respondents were generally asked to rate the statements on a 7- point scale.

Keywords. Normative beliefs; smoking ban; focus theory of normative conduct.

Study 3) Normative knowledge accessibility and judged usability. Based on the idea that normative knowledge was mentally represented as associations between beliefs and other individuals, we explored normative knowledge towards personality traits activation and use in judgments under uncertainty. As far as we knew, neither the effects of priming on judgments with normative judged usability, nor the effects of normative knowledge chronic accessibility on judgments, had been investigated. Our research intended to explore this by adapting Higgins, Rholes, and Jones's (1977) classic study on category accessibility and impression formation, and Fazio and Williams's (1986) procedure to measure chronic accessibility of normative knowledge regarding others' evaluations of personality traits.

Methodology. One hundred and forty-four students (14 males), enrolled in introductory psychology courses at Lisbon University, participated in this experiment. Individuals were invited to participate in a two part study. On the first session of the study we collected preexperimental measures of chronic accessibility on personality

traits normative knowledge. The second session was the experimental session, adapted from Higgins et al. (1977). A fundamental difference between procedures was the addition of a normative judged usability condition. This condition allowed for exploring if and how normative knowledge towards personality traits, sociocultural descriptive normative knowledge in particular, was activated and used in judgments under uncertainty.

Keywords. Normative knowledge; accessibility; judged usability; impression formation.

Study 4) Is it yours? Implicit measurement of normative beliefs. These study general purposes were to explore the involvement of automatic processes in normative beliefs and to test if normative implicit measures could explain behavior.

Most normative influence studies have relied on data obtained by self-reports, explicit-type measures. These measures usually emphasize intentionality, promoting the use of controlled processes. Nonetheless, there was evidence that individuals commonly have limited awareness of the influence of normative processes (e.g., Nolan, Schultz, Cialdini, Goldstein, & Griskeviclus, 2008), suggesting normative influence in behavior cannot be fully accounted by explicit measures. Therefore, we argued it was important to measure normative beliefs implicitly and explored a normative version of the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). This version explored individual's implicit beliefs towards most people preferring apples and candy bars, i.e., sociocultural injunctive type norms. The psychometric characteristics of the normative IAT (accuracy, internal consistency and convergent validity) were tested and compared with traditional and personalized versions of the IAT. Relations between the three implicit measures and intentional behavior were then explored.

Methodology. Eighty-three students (13 males) participated in one study and 148 students (31 males) participated in a second study. Participants were randomly assigned to a normative, a personalized or a traditional IAT in both studies. In the second study participants were further asked to answer a questionnaire that measured explicit attitudes, social norms and intentional behavior.

Keywords. Implicit Association Test (IAT); normative beliefs; attitudes; implicit preferences; automaticity.

References

Aarts, H., & Dijksterhuis, A. (2003). The silence of the library: Environment, situational norm, and social behavior. *Journal of Personality and Social Psychology, 84*, 18–28.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic review. *British Journal of Social Psychology, 40*, 471–499.

Asch, S. E. (1955). Opinions and social pressure. *Scientific American*, *193*, 31–35.

Baldwin, M. W., Carrell, S. E., & Lopez, D. F. (1990). Priming relationship schemas: My adviser and the pope are watching me from the back of my mind. *Journal of Experimental Social Psychology, 26,* 435–454.

Bargh, J. A. (1996). Automaticity in social psychology. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 169–183). London: Gilford.

Black, J. S., Stern, P. C., & Elworth, J. T. (1985). Personal and contextual influences on household energy adaptations. *Journal of Applied Psychology*, *70*, 3–21.

Borsari, B., & Carey, K. B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies on Alcohol*, *64*, 331–341.

Bratt, C. (1999). The impact of norms and assumed consequences on recycling behavior. *Environment and Behavior*, *31*, 630–656.

Bruner, J. S. 1957. On perceptual readiness. *Psychological Review 64*, 123–152.

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. In S. T. Fiske, D. L. Schacter, & C. Zahn-Waxler (Eds.), *Annual review of psychology* (Vol. 55, pp. 591–621). Palo Alto, CA: Annual Reviews.

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 201–234). New York: Academic Press.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58,* 1015–1026.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity, and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 151–192). New York, NY: McGraw-Hill.

Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review*, *82*, 407–428.

Darley, J. M., & Latane, B. (1970). Norms and normative behavior: Field studies of social interdependence. In J. Macaulay & L. Berkowitz (Eds.), *Altruism and helping behavior* (pp. 83–102). San Diego,CA: Academic Press.

De Groot, J., & Steg, L. (2009). Morality and prosocial behavior: The role of awareness, responsibility, and norms in the norm-activation model. *Journal of Social Psychology, 149,* 425–449.

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influence upon individual judgment. *Journal of Abnormal and Social Psychology*, *51*, 629–63.

Epley, N., & Gilovich, T. (1999). Just going along: Nonconscious priming and conformity to social pressure. *Journal of Experimental Social Psychology, 35,* 578–589.

Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude-perception and attitude-behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology, 51*, 505–514.

Festinger, L. (1950). Informal social communication. *Psychological Review*, *67*, 271–282.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology, 84,* 148–164.

Goldstein, N., Cialdini, R., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research, 35,* 472–482.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Harvey, M. D., & Enzle, M. E. (1981). A cognitive model of social norms for understanding the transgression-helping effect. *Journal of Personality and Social Psychology*, *41*, 866 – 875.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability and salience. In E. T. Higgins & A.W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York: Guilford.

Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology, 13*, 141–154.

Hogg, M. A., & Turner, J. C. (1987). Social identity and conformity: A theory of referent informational influence. In W. Doise & S. Moscovici (Eds.), *Current issues in European social psychology* (Vol. 2, pp. 139 – 182). New York: Cambridge University Press.

Jacobson, R. P., Mortensen, C. R., & Cialdini, R. B. (2011). Bodies obliged and unbound: Differentiated response tendencies for injunctive and descriptive social norms. *Journal of Personality and Social Psychology*, *100*, 433–448.

Joly, J. E, & Stapel, D. A. (2008). Staff, miter, book, share: How attributes of Saint Nicholas induce normative behavior. *European Journal of Social Psychology, 34*, 1047–1056.

Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin, 26,* 1002–1012.

Krebs, D. L. (1970). Altruism: An examination of the concept and a review of the literature. *Psychological Bulletin*, *73*, 258–302.

Miller, D. T., & Prentice, D. A. (1996). The construction of social norms and standards. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 799–829). London: Gilford.

Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative social influence is underestimated. *Personality and Social Psychology Bulletin, 34*, 913–923.

Pepitone, A. (1976). Toward a normative and comparative biocultural social psychology. *Journal of Personality and Social Psychology*, *34*, 641–653.

Reno, R. R., Cialdini, R. B., & Kallgren, C. A. (1993). The transsituational influence of social norms. *Journal of Personality and Social Psychology, 64,* 104–112.

Rhodes, N., & Ewoldsen, D. R. (2009). Attitude and norm accessibility and cigarette smoking. *Journal of Applied Social Psychology, 39*, 2355–2372.

Schultz, P. W. (1999). Changing behavior with normative feedback interventions: A field experiment of curbside recycling. *Basic and Applied Social Psychology, 21,* 25−36.

Schultz, P. W., Gouveia, V. V., Cameron, L. D., Tankha, G., Schmuck, P., & Frank, M. (2005). Values and their relationship to environmental concern and conservation behaviour. *Journal of Cross-Cultural Psychology*, *36*, 457−475.

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science, 18,* 429–434.

Schwartz, S. H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 221–279). San Diego, CA: Academic Press.

Schwartz, S. H., & Fleishman, J. A. (1982). Effects of negative personal norms on helping behavior. *Personality and Social Psychology Bulletin*, *8*, 81–86.

Shah, J. (2003). Automatic for the people: How representations of significant others implicitly affect goal pursuit. *Journal of Personality and Social Psychology, 84,* 661–681.

Shaffer, L. S. (1983). Toward Pepitone's vision of a normative social psychology: What is a social norm? *Journal of Mind and Behavior*, *4*, 275–294.

Sherif, M. (1936). *The psychology of social norms*. New York: Harper.

Stapel, D. A., Joly, J. E, & Lindenberg, S. M. (2010). Being there with others: How people make environments norm-relevant. *British Journal of Social Psychology, 49*, 175–187.

Staub, E. (1972). Instigation to goodness: The role of social norms and interpersonal influence. *Journal of Social Issues*, *28*, 131–150.

Stevenson, R. L. (1979). *Strange Case of Dr. Jekyll and Mr. Hyde*. New York: Penguin Books.

Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude–behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin*, *8*, 776–793.

Terry, D. J., Hogg, M. A., & White, K. M. (2000). Attitude–behaviour relations: Social identity and group membership. In D. J. Terry & M. A. Hogg (Eds.), *Attitudes, behaviour, and social context: The role of norms and group membership* (pp. 67–94). Mahwah, NJ: Erlbaum.

Wellen, J. M., Hogg, M. A., & Terry, D. J. (1998). Group norms and attitude–behavior consistency: The role of group salience and mood. *Group Dynamics: Theory Research, and Practice*, *2*, 48–56.

Study 1

Integrative Framework of Normative Influence: Understanding Proenvironmental Behavior[1]

Sílvia Luís and José Palma-Oliveira

Lisbon University

[1] Manuscript submitted for publication in *Personality and Social Psychology Bulletin*.

Abstract

Based on the idea that an integrative framework of normative influence would contribute to its better understanding, several normative beliefs in different classes of proenvironmental behaviors were collected in a survey. Results evidenced that these framework variables accounted for a considerable amount of behavior variability, being this amount dependent on the effectiveness of normative influence. As expected, normative variables accounted for 34% of recycling variability, the behavior where normative influence was found more effective, and for 12% of public transport use variability, the behavior where normative influence was found less effective. In addition, injunctive type beliefs were found to differently moderate the relationship between descriptive-type beliefs and public transport use. Theoretical and practical implications are discussed.

Keywords: social normative beliefs; personal normative beliefs; proenvironmental behavior.

Integrative Framework of Normative Influence: Understanding Proenvironmental Behavior

Environmental problems are largely created by human behavior. They are disruptions in natural processes that have been caused by human activities since the beginning of times (see Palma-Oliveira, 2011). While each individual behavior is largely inconsequential, the aggregated impact severely disrupts natural processes. Solutions to environmental problems might take various pathways (e.g., political, technological, behavioral). Nonetheless, virtually any given solution to environmental problems will require changes in behavior (see Schultz & Kaiser, in press). Theories and models in social psychology and environmental psychology have emphasized the influence of different variables in promoting and predicting proenvironmental behavior. We argued that normative influence might be especially relevant to understand proenvironmental behaviors because these generally imply that individuals benefit others, whereas often no direct individual benefits are gained by engaging in these behaviors. Different types of social norms related to different motivations and aspects of normative influence have been identified in literature. Considering that the use of a single type of norms might not be sufficient to capture normative influence in behavior we propose the systematic use of an integrative framework.

Three classes of proenvironmental behaviors in which normative influence effectiveness was expected to diverge were chosen to explore the usefulness of an integrative framework: recycling, public transport use, and organic products purchase.

Norms and Proenvironmental Behavior

Many theories and models have included normative variables, working solely or simultaneously with other variables, to explain and predict a variety of behaviors, including proenvironmental-type behavior. The focus theory of normative conduct (Cialdini, Kallgren, & Reno, 1991; Cialdini, Reno, & Kallgren, 1990); the norm activation model (Schwartz, 1977); the theory of reasoned action (Fishbein & Ajzen, 1975), one of the most widely applied theories of social behavior, later extended to the theory of planned behavior (Ajzen, 1991); the theory of interpersonal behavior (Triandis, 1977); the value belief norm theory (Stern , Dietz, Abel, Guagnano, & Kalof,1999); the theory of trying (Bagozzi & Warshaw, 1990); and the motivation-opportunity-abilities model (Ölander & Thøgersen, 1995), are some examples.

These theories varied in conceptualization and in the relative importance attributed to norms. For instance, reasoned action and planned behavior researchers have conceptualized norms as the perceived social pressure to engage or not engage in a behavior (labeled as subjective norms) and have consistently found that these were the weakest predictors in models of behavior intentions, suggesting their lesser importance in guiding behavior (see Armitage & Conner, 2001). For researchers in the focus theory of normative conduct, norms can either be descriptive or injunctive and can be strategically manipulated to guide behavior (e.g., Cialdini et al, 1991; Cialdini et al, 1990). Based on the idea that researchers have been studying different aspects that compose normative influence and could be studied in an integrative fashion, we will briefly review the most relevant findings in normative beliefs.

Social Normative Beliefs

In social norms literature, researchers have distinguished between two categories of social normative beliefs: descriptive normative beliefs and injunctive normative beliefs (e.g., Cialdini et al., 1991; Cialdini et al., 1990). According to the focus theory of normative conduct, descriptive normative beliefs refer to how an individual thinks others behave in a particular situation. For instance, the belief that most people do recycle. Injunctive normative beliefs refer to what an individual thinks others approve or disapprove of. For instance, believing most people approve of recycling.

A substantial body of research has evidenced descriptive normative beliefs to be strong predictors of proenvironmental behavior and behavioral intentions (e.g., Garvill, 1999; Göckeritz et al., 2010; Nolan, Schultz, Cialdini, Griskevicius, & Goldstein, 2008; Staats, Wit, & Midden, 1996; White, Smith, Terry, Greenslade & McKimmie, 2009). However, injunctive normative beliefs' role in behavior has been less clear. Injunctive normative beliefs, subjective injunctive beliefs in particular, have often emerged as weak predictors of behavioral intentions (Armitage & Conner, 2001; White et al., 2009). Recent findings have started to unravel the role of injunctive normative beliefs. This type of beliefs was found to moderate the relationship between descriptive normative beliefs and behavior. High injunctive normative beliefs were found to strengthen the impact of descriptive normative beliefs in energy conservation behavior (Göckeritz et al., 2010). Importantly, these findings were consistent with prior research on aligned normative information. Field studies evidenced that normative messages which include aligned descriptive and injunctive normative information had a higher impact on behavior than messages including only one of these norms (e.g., Cialdini, 2003; Schultz, Khazian, & Zaleski, 2008). Behavior was found more likely to occur if it was believed to be commonly done, as well as approved, by others. Nonetheless, it is

necessary to specify that descriptive and injunctive beliefs are differentially relevant to two fundamental human goals (making accurate/efficient decisions and gaining/maintaining social approval, respectively) and can have unique effects on behavior, cognitions and affective responses (see Jacobson, Mortensen, & Cialdini, 2011).

Within social norms literature, the influence of specific *others* has also been studied. Society in general (Pepitone, 1976), important others (Fishbein & Azjen, 1975) and others whom one identifies with (e.g., Hogg & Turner, 1987) can differently influence individuals cognitions and behaviors (see Cialdini & Trost, 1998).

Personal Normative Beliefs

Personal norms are yet another consistent normative predictor of proenvironmental behavior. They correspond to feelings of a moral obligation to engage in certain behaviors. Schwartz (1977) proposed that individuals had self-expectations for their own behavior which could derive from social influence, and were enforced through the anticipation of self-enhancement or self-deprecation. Schwartz (1977) proposed that individuals had self-expectations for their own behavior which could come from social influence, and were enforced through the anticipation of self-enhancement or self-deprecation. Schwartz (1977) argued that social injunctive were quite different from personal norms. Unlike social norms, personal norms are the individual's internalized moral or ethical rules and are independent from the immediate expectations and influences of others (see also Manstead, 2000). Schwartz (1977) argued that injunctive social norms did not contribute much more to behavior than personal norms. However, there is evidence that the mere possession of a personal norm does not lead routinely to norm-based action. Kallgren, Reno, and Cialdini (2000)

evidenced that the use of procedures that made individuals focus more on themselves or on the situation moderated the degree to which personal norms were likely to guide behavior. When participants' attention was focused away from themselves, even strong personal norms were not predictive of behavior; when participants' attention was focused on themselves strong personal norms became quite predictive.

Proenvironmental-type behaviors are often related to morality and ethics and, therefore, personal norms have been found to be particularly influential (De Groot & Steg, 2009; Manstead, 2000; Stern et al., 1999). Personal normative beliefs have been positively related to several proenvironmental behaviors (see Bamberg & Möser, 2007), including recycling (Bratt, 1999; Hopper & Nielsen, 1991; Vining & Ebreo, 1992), public transportation use (Bamberg, Hunecke, & Blöbaum, 2007; Nordlund, & Garvill, 2003) and organic food purchase (Arvola et al., 2008; Thøgersen, & Ölander, 2006).

The Present Research

Integrative Framework of Normative Influence

Although norms have been conceptualized in a variety of ways (see Cialdini & Trost, 1998), a fundamental problem in norm research is actually the concept's insufficiency in capturing normative influence (e.g., Armitage & Conner, 2001).

This study's conceptualization of personal normative beliefs has basically followed on Schwartz's (1977). It was on the conceptualization of social normative beliefs that his study was most original. Besides distinguishing between descriptive and injunctive features of social normative influence, we further considered the different sources of such beliefs in order to conceptualize social normative influence. Researchers have traditionally focused the injunctive nature of sociocultural, subjective and referent

norms (see Armitage & Conner, 2001; White et al, 2009). In fact, some have argued that descriptive/injunctive might be a false dichotomy (see David & Turner, 2001). We do not share this opinion. We believe that distinguishing the descriptive nature of these norms can be most relevant. Furthermore, different psychological processes and motivations have been related to these social norms. We believed that integrating these different processes and motivations was not incompatible. On the contrary, it should allow for a broader comprehension of normative influence. The individual's behaviors and beliefs are not expected to be reflecting a single process or motivation (Cialdini & Goldstein, 2004; Cialdini & Trost, 1998). Returning to the recycling example, in practice we were distinguishing between those who recycle and those who approve of recycling: are they others in general, important others, or others whom individuals identify with? Figure 1 illustrates the proposed integrative framework.

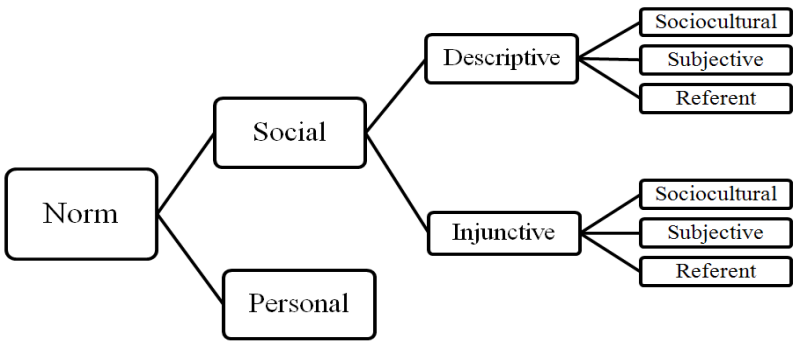


Figure 1. Integrative framework of normative influence.

As far as we know, researchers have not explicitly conceptualized normative influences in such an integrative fashion. Based on this framework, different levels of normative composite measures could be used, in accordance with research purposes and with the particularities of the norms being studied. Therefore, in this research we

initially explored whether, and how, these normative beliefs could be related and structured.

Normative Influence Effectiveness and Behavior Prediction

This study's main expectation combined two ideas. The first was that the use of the integrative framework allowed for accounting for a greater amount of behavior variability than traditional values. As reference value, we considered the average relation between subjective norms and behavioral intention of $R^2 = .12$, reported by Armitage and Conner's meta-analysis (2001). The second idea was that, the more effective normative influence was, the more behavioral variability it should explain.

In the environmental problems context, normative influence was expected to be more effective in promoting and maintaining proenvironmental behavior when both injunctive and personal normative beliefs were high. Most environmental problems exist because, in average, individuals do not behave proenvironmentally[2]. Therefore, individuals' descriptive normative beliefs towards proenvironmental behaviors, in average, are not likely to be high. In this scenario, social normative influence should be most effective when injunctive normative beliefs were strong enough to override descriptive beliefs. In line with this argument there is evidence that injunctive norms can promote infrequent behaviors (Cialdini 2003; Schultz, Nolan, Cialdini, Goldstein, &

[2] We are not arguing about the reasons why individuals behave, or not, proenvironmentally. What we are arguing is that, for environmental problems to actually exist, individuals, in average, must not be behaving in a proenvironmental way. If all the individuals behaved proenvironmentally, then, theoretically, environmental problems would no longer exist. It is also necessary to note that proenvironmental behavior is a relative term and is culturally and historically prescribed. The impact of a behavior on the natural environment must be considered in relation to other actions (see Schultz & Kaiser, in press).

Griskevicius, 2007), be transsituationally influential (Reno, Cialdini & Kallgren, 1993), and, most relevant, strengthen the impact of descriptive normative beliefs on behavior (Göckeritz et al., 2010). In other words, if one believes others do not recycle, then one will be more likely to recycle if one strongly believes others approve of recycling.

Whereas social normative influence has been typically related to contextual influences (e.g., Cialdini et al., 1990), personal normative influence has been more related to the individual's dispositional characteristics (Kallgren et al., 2001; Schwartz, 1977). To account for the situations when individuals are focused on themselves, we considered that normative beliefs would be more effective when both injunctive and personal normative believes were high. Therefore, a behavior like recycling would be more likely to be best explained by normative variables if individuals strongly believed others approved of recycling and if individuals felt a strong personal obligation to recycle.

In the present study, norm effectiveness was not compared between individuals with different normative beliefs but rather between classes of environmental issues where normative effectiveness was expected to diverge. We considered that a "thematic" level of analysis could be more interesting and have more sensible applicability. Three classes of behaviors were considered: recycling, public transport use, and organic food purchase. All these behaviors had been generally related in literature to normative variables and, in the Portuguese context, they appeared to have quite different normative frames.

Recycling has been positively related to normative variables (e.g., Ebreo, Hershey, & Vining, 1999; Kurz, Linden, & Sheehy, 2007; Oom do Valle, Reis, Menezes, & Rebelo, 2004; White et al., 2009). Moreover, recycling behavior has been gaining some popularity in Portugal. Between 2004 and 2009 there was a 15% increase

in the amount of waste recycled (Instituto Nacional de Estatística, INE, 2010 - Statistics Portugal). Therefore, we first explored whether injunctive and personal normative were indeed strong and later we analyzed if normative beliefs explained for a considerable amount of recycling variability (hypothesis 1).

Public transport use has also been related to normative variables (Bamberg et al., 2007; Bamberg & Schmidt, 2003; Hunecke, Haustein, Böhler, & Grischkat, 2010). However, in Portugal, the trend has been to switch from public to private transports. In 1991, 24% of the individuals in the Lisbon Metropolitan Area used private transportation. In 2001 the number increased to 44% (INE, 2003).Considering this harmful trend, we did not expect normative beliefs to be effectively promoting public transport use. Therefore, we first explored whether injunctive and/or personal normative were, indeed, weak and later we analyzed if normative beliefs explained for a small amount of public transport use variability (hypothesis 2).

Organic food purchase has also been related to normative variables (Arvola et al., 2008; Lodorfos & Dennis, 2008; Thøgersen, & Ölander, 2006). Organic farming is still quite recent in Portugal, although it has exponentially increased over the last 20 years (INE, 2009). To the best of our knowledge, there are no official statistics concerning organic food purchase. We interpreted this lack of information as reflecting a lack of relevance or social interest towards the subject. We considered this a new and ambiguous issue, far less controversial or promoted than the previous ones. In fact, psychological research conducted with Portuguese samples has evidenced that buying organic food was an infrequent and not habitual behavior (Gaspar de Carvalho, 2009). For these reasons, we applied a different rationale to understanding normative effectiveness. There is strong proof that individuals are most likely to use the evidence of others' behavior in order to decide the most effective course of action in new and

ambiguous situations (e.g., Deutsch & Gerard, 1955; Sherif, 1936). Therefore, in what comes to organic food purchase, what we could predict was that individuals were likely to follow on evidence of others' behaviors. Descriptive normative beliefs were expected to emerge as a good predictor of organic food purchase (hypothesis 3). Normative beliefs configuration and behavior prediction were merely explored.

Moderation Role of Injunctive Normative Beliefs

Following on Göckeritz et al. (2010), we additionally tested the moderating role of injunctive normative beliefs in the relationship between descriptive normative beliefs and proenvironmental behavior, on the three classes of behavior. We expected to find moderation effects (hypothesis 4).

Method

Participants

One-hundred and fourteen university students responded to the survey. Forty respondents were from the Évora Psychology Department, 40 respondents were from the Lisbon Technical University, and 34 respondents were from Egas Moniz Health Science Superior Institute. The majority of respondents were female (70 females). Respondents' age ranged from to 18 to 48 (M = 21.19, SD = 3.59).

To ensure that respondents had the opportunity to perform the behaviors in question, respondents' behavioral frequency was initially analyzed. On a 7- point scale ranging from 1 (*never*) to 7 (*very often*), on average respondents reported that over the previous two weeks they had managed their household waste disposal a moderate amount of times (M = 4.07, SD = 1.83), they had needed to use some kind of transport, private or public, a moderate amount of times (M = 4.79, SD = 2.43), and they had gone grocery shopping sometimes (M = 3.37, SD = 2.02). Therefore, it was considered that the opportunity to recycle/use public transport/purchase organic food existed.

Materials and Procedure

Individuals were invited to participate in a survey before lectures and were randomly given an Order 1 or Order 2 questionnaire. In the Order 1 questionnaire, respondents were presented with questions regarding behavior and personal norms, in a first page, and with various descriptive and injunctive questions, in a second page. In the Order 2 questionnaire the pages were inverted (see Order 2 questionnaire in Appendix). This counterbalance was done to control for possible effects of social norms activation on behavior and personal norms, and vice-versa. There was evidence that

priming normative contents influences the individual towards more normative cognitions (e.g., Epley & Gilovich, 1999).

The average response time to the questionnaire was 20 minutes. All participants were debriefed and thanked for their participation.

Questionnaire. The questionnaire was composed by several statements regarding norms and behaviors towards recycling, public transport use, and organic food purchase. Item-construction rationale followed on previous research on social norms and behavioral models.

Respondents were generally asked to rate the statements on a 7- point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Behavior was measured by asking participants to rate how often they recycled/used public transportation/purchased organic food, on a 7- point scale ranging from 1 (*never*) to 7 (*very often*). This provided a past behavior self-reported measure (e.g., Fishbein & Ajzen, 1975). In the public transport domain, individuals were also inquired as to whether they travelled by private transportation and, if they did not, they were asked to choose between two alternatives: (a) preferring public transportation or (b) not having access to private transportation.

Personal normative beliefs were tapped by asking participants the amount of personal and social obligation/consideration towards recycling/using public transportation/purchasing organic food on scales ranging from 1 to 7 (e.g., Schwartz, 1977).

Various types of descriptive and injunctive normative beliefs were measured: sociocultural (e.g., Pepitone, 1976), subjective (Fishbein & Azjen, 1975), and referent (e.g., Hogg & Turner, 1987). Participants were asked to rate to what extent they agreed that: (a) most people usually recycle/use public transportation/purchase organic food,

i.e. sociocultural descriptive norms; (b) people with importance in their life usually recycle/use public transportation/purchase organic food, i.e. subjective descriptive norms; (c) people whom they identified with usually recycle/use public transportation/purchase organic food, i.e. referent descriptive norms; (d) most people approved of recycling/using public transportation/purchasing organic food, i.e. sociocultural injunctive norms; (e) people with importance in their life approved of recycling/using public transportation/purchasing organic food, i.e. subjective injunctive norms; (f) people whom they identified with approved of recycling/using public transportation/purchasing organic food, i.e. referent injunctive norms.

Participants were also asked about their gender and age.

Results

All statistical tests were bilateral and an alpha level of .050 was used.

Question order had been counterbalanced to minimize probable order effects. For exploratory purposes we tested such effects for each measure. Only one measure differed: personal normative beliefs towards recycling behavior was lower when respondents had answered first to the social normative questions (M = 4.81, SD = 1.47) than when they had answered first to the personal normative beliefs question (M = 5.32, SD = 1.21), $t(112) = -2.02$, $p = .046$. This suggests that thinking about social norms might influence personal norms.

Tests of mean differences between male and female respondents were also conducted. No differences were found.

In what concerns behavior, on a 7- point scale ranging from 1 (*never*) to 7 (*very often*), on average respondents reported that, when they managed their household waste disposal, they separated it so it could be later recycled a moderate amount of times (M = 4.57, SD = 1.82), that when they travelled they used public transports a moderate amount of times (M = 4.61, SD = 2.04), and that when they went grocery shopping they purchased organic products few to sometimes (M = 2.95, SD = 1.60). Furthermore, in what concerned public transport, most respondents classified themselves as private transportation users (79.80%). Within the totality of respondents who classified themselves as public transportation users only 17.40% reported using public transport because they preferred it; the majority reported using public transport because they did not have access to private transportation.

Integrative Framework of Normative Influence

We initially conducted principal component analyses to explore whether the several measures that compose the integrative framework of normative influence were related and to explore how they were structured.

The factorability of the seven normative measures concerning recycling/public transport use/organic food purchase was first examined. Bartlett's tests of sphericity were significant (all *p*s < .001) and the lowest Kaiser-Meyer-Olkin measure was .66, suggesting normative variables were sufficiently correlated to conduct principal component analyses in the three environmental issues.

Three criteria were balanced for the retention of components: (a) retain all components with eigenvalues greater than 1.00; (b) assure variables were not underrepresented, i.e. item communalities should approximately be greater than .70; and (c) explain more than 70% of normative variables variance. Orthogonal varimax rotation was applied for structure simplification – oblique promax rotations results yielded similar results to varimax rotation in the three environmental issues (see Stevens, 2002). Components interpretation was based on the relative strength of variable loadings. Following on Stevens' (2002) guidelines, for a sample size of 100, loadings with absolute value greater than or equal to .512 were considered statistically significant.

Recycling. Three components had eigenvalues above 0.92 and accounted for 73% of the variance (see Table 1). The lowest item communality was .68.

Component 1 accounted for 32% of variance explained, after varimax rotation, and loaded on injunctive normative beliefs (sociocultural, subjective and referent). Component 2 accounted for 21% of variance explained and loaded on descriptive normative beliefs (sociocultural, subjective and referent). Component 3 accounted for

19% of variance explained and loaded on personal normative beliefs. The referent descriptive norm also loaded on this component, even if, according with the cut-off value guidelines we were following, statistical significance should have been only marginally reached.

Results have illustrated a distinction between personal and social normative beliefs. Furthermore, social descriptive and injunctive beliefs distinction was also sustained. Therefore, composite measures for descriptive and injunctive beliefs were created averaging these measures ($\alpha_{descriptive} = .68$, $M = 4.40$, $SD = 1.02$; $\alpha_{injunctive} = .77$, $M = 5.94$, $SD = 0.94$) and used on subsequent analyses.

Table 1

Principal Component Eigenvalues, Percentages of Variance Explained and Loadings for Recycling Normative Beliefs (N = 114)

Component	1	2	3
Eigenvalue	2.27	1.49	1.34
Percentage of variance	32.38	21.30	19.25
Loadings			
Sociocultural injunctive	**0.79**	0.12	-0.21
Subjective injunctive	**0.81**	0.19	0.16
Referent injunctive	**0.82**	0.12	0.29
Sociocultural descriptive	0.07	**0.90**	-0.12
Subjective descriptive	0.43	**0.55**	0.44
Referent descriptive	0.36	**0.56**	0.49
Personal	-0.00	-0.03	**0.86**

Note. Varimax with Kaiser normalization rotation method was used. Rotation converged in five iterations. Values in bold have absolute values greater than or equal to .512.

Public transport use. Four components had eigenvalues above 0.96 and accounted for 84% of the variance (see Table 2). The lowest item communality was .74.

Component 1 accounted for 34% of variance explained, after varimax rotation, and loaded strongly on descriptive beliefs (subjective and referent), but also significantly on injunctive beliefs referent normative belief (subjective and referent). Component 2 accounted for 20% of variance explained and loaded on injunctive-type beliefs (sociocultural, subjective and referent). Component 3 accounted for 15% of variance explained and loaded exclusively on descriptive sociocultural normative beliefs. Component 4 accounted for 15% of variance explained and loaded exclusively on personal normative beliefs.

Results showed a distinction between personal and social normative beliefs. However, injunctive subjective and referent normative measures cross-loaded significantly on Components 1 and 2, suggesting that these beliefs were simultaneously explained by injunctive and descriptive features. Moreover, sociocultural descriptive beliefs loaded separately in one component. These results suggest that normative influence concerning public transport use was complex. To better understand it, on subsequent analyses we analyzed descriptive and injunctive-type variables separately.

Table 2

Principal Component Eigenvalues, Percentages of Variance Explained and Loadings for Public Transport Use Normative Beliefs (N = 114)

Component	1	2	3	4
Eigenvalue	2.38	1.41	1.06	1.05
Percentage of variance	34.03	20.23	15.14	15.01
Loadings				
Sociocultural injunctive	-0.05	**0.88**	0.17	0.14
Subjective injunctive	**0.55**	**0.56**	-0.22	-0.26
Referent injunctive	**0.66**	**0.55**	-0.18	0.01
Sociocultural descriptive	0.06	0.06	**0.97**	0.02
Subjective descriptive	**0.90**	-0.04	0.07	0.12
Referent descriptive	**0.90**	0.06	0.09	-0.01
Personal	0.06	0.07	0.00	**0.97**

Note. Varimax with Kaiser normalization rotation method was used. Rotation converged in seven iterations. Values in bold have absolute values greater than or equal to .512.

Organic food purchase. Three components had eigenvalues above 0.88 and accounted for 77% of the variance (see Table 3). The lowest communality was .69.

Component 1 accounted for 33% of variance explained, after varimax rotation, and loaded on injunctive beliefs (sociocultural, subjective and referent). Component 2 accounted for 26% of variance explained and loaded on descriptive beliefs (subjective and referent). Component 3 accounted for 19% of variance explained and loaded on personal normative beliefs and on descriptive sociocultural normative beliefs.

Unlike what was found for recycling and public transport use, personal and social normative beliefs did not emerged distinctly here. A social normative measure (sociocultural descriptive beliefs) was represented in the same component as personal normative beliefs. However, the distinction between descriptive and injunctive measures was broadly supported. The other descriptive measures and the injunctive measures loaded in different components. The sociocultural descriptive measure, besides loading on Component 3, also loaded considerably on Component 2 (.38), the component where the other descriptive measures loaded. Therefore, and for the sake of parsimony, we computed composite descriptive and injunctive beliefs (averaging the related sociocultural, subjective, and referent beliefs) to use on subsequent analyses. In support of our decision, measures of internal consistency for the composite measures were quite satisfactory ($\alpha_{descriptive} = .74$, $M = 3.31$, $SD = 1.14$; $\alpha_{injunctive} = .84$, $M = 4.65$, $SD = 1.23$).

Table 3

*Principal Component Eigenvalues, Percentages of Variance Explained and Loadings for Organic Food Purchase Normative Beliefs (*N = *114*)

Component	1	2	3
Eigenvalue	2.29	1.85	1.30
Percentage of variance	32.70	26.41	18.53
Loadings			
Sociocultural injunctive	**0.81**	0.00	0.27
Subjective injunctive	**0.85**	0.33	0.02
Referent injunctive	**0.80**	0.42	-0.03
Sociocultural descriptive	-0.14	0.38	**0.74**
Subjective descriptive	0.17	**0.84**	0.31
Referent descriptive	0.33	**0.84**	0.06
Personal	0.34	0.06	**0.76**

Note. Varimax with Kaiser normalization rotation method was used. Rotation converged in nine iterations. Values in bold have absolute values greater than or equal to .512.

Normative Influence Effectiveness and Behavior Prediction

Social normative beliefs. We explored if individuals had strong injunctive beliefs towards recycling and weak injunctive beliefs towards public transport use. No expectations were made concerning organic food purchase.

Considering the infrequency of proenvironmental behaviors, injunctive beliefs' strength was considered more informative when taking into account descriptive beliefs. Therefore, we computed a relative measure by subtracting individuals' beliefs towards people acting (descriptive beliefs) from individuals' beliefs concerning others approval of acting proenvironmentally (injunctive beliefs). Numbers below zero indicated that beliefs towards people approving proenvironmental behavior were lower than beliefs towards people performing these behaviors, i.e. indicated a countereffective normative influence. Numbers around zero indicated that beliefs towards people approving and engaging in these behaviors had similar strength, i.e. indicated no normative influence. Numbers above zero indicated that beliefs towards people approving these proenvironmental behaviors were higher than beliefs concerning people performing proenvironmental behavior, i.e. indicated an effective normative influence (see Table 4).

Table 4

Measures of Central Tendency and t-Tests against Zero for Relative Social Normative Measures

Social measure	*M*	*SD*	*t*(113)
Recycling	1.55	1.01	16.41***
Public transport use, sociocultural	1.27	1.14	11.81***
Public transport use, subjective	1.13	1.59	5.39***
Public transport use, referent	0.66	1.30	7.61***
Organic food purchase	1.35	1.24	11.65***

Note. Higher numbers indicate higher injunctive than descriptive scores.

*** $p < .001$.

Relative estimates indicated significantly higher injunctive than descriptive normative beliefs for all three classes of behaviors, meaning normative influence was always effective. Nevertheless, a repeated measures analysis of variance (ANOVA) revealed that the behaviors relative scores were significantly different, $F(4, 113) = 10.70$, $p < .001$, $\eta p^2 = .086$. Pairwise comparisons showed that public transport use relative measure was significantly lower than the recycling and organic food purchase ones, as well as lower than sociocultural and subjective measures for public transport use. In sum, for all three environmental issues, injunctive measures were significantly higher than descriptive measures and the relative referent measure mean for public transport was inferior to all others.

Personal normative beliefs. We explored whether individuals had strong personal beliefs towards recycling or weak personal beliefs towards public transport use. No expectations were held concerning organic food purchase.

To have a more illustrative measure of the degree of internalization of personal norms, we subtracted social normative beliefs that were equivalent to personal norms measures (e.g., social obligation towards recycling) from personal normative beliefs. Higher numbers indicated that individuals took into account more the personal than the social aspects, suggesting stronger personal normative beliefs. Measures are presented in Table 5.

Table 5

Measures of Central Tendency and t-Tests against Zero for Relative Personal Normative Measures

Personal measure	*M*	*SD*	*t*(113)
Recycling	0.87	1.65	5.59***
Public transport use	-0.54	1.72	-3.36**
Organic food purchase	-0.01	1.26	-0.07

Note. Higher numbers indicate stronger personal norms.

** $p < .010$, *** $p < .001$.

As expected, personal normative beliefs were significantly stronger towards recycling and significantly weaker towards public transport use. No significant differences emerged regarding organic food purchase.

Predicting recycling. Injunctive and personal normative beliefs towards recycling were strong. Therefore, we expected normative variables to explain a considerable amount of recycling behavior (hypothesis 1). The summary of a multiple regression analysis entering normative measures as predictors is provided in Table 6.

Table 6

Summary of Multiple Regression Analysis for Normative Measures Predicting Recycling (N = 114)

Normative measure	*B*	*SE B*	β
Descriptive	0.67	0.16	.38***
Injunctive	0.05	0.17	.02
Personal	0.48	0.11	.36***

Note. $R^2_{\text{adjusted}} = .34$, $F(3, 110) = 20.12$, $p < .001$.

*** $p < .001$.

Results did not refute hypothesis 1. Normative measures explained for 34% recycling variability. Descriptive and personal normative beliefs emerged as significant predictors of recycling but injunctive beliefs did not.

Predicting public transport use. Injunctive normative beliefs towards public transport use (in particular referent beliefs) were found weaker than towards the other classes of behaviors. In addition, personal normative beliefs towards using public transport did not seem internalized, being overridden by social obligations. Therefore, we did not expect normative beliefs to explain a great amount of behavior variability

(hypothesis 2). The summary of a multiple regression analysis entering normative measures is provided in Table 7.

Table 7

Summary of Multiple Regression Analysis for Normative Measures Predicting Public Transport Use (N = 114)

Normative measure	*B*	*SE B*	β
Sociocultural descriptive	-0.13	0.31	-.04
Subjective descriptive	0.17	0.20	.12
Referent descriptive	0.48	0.20	.34*
Sociocultural injunctive	-0.09	0.19	-.05
Subjective injunctive	0.04	0.17	.03
Referent injunctive	-0.32	0.22	-.20
Personal	0.27	0.12	.20*

Note. $R^2_{\text{adjusted}} = .12$, $F(7, 106) = 3.32$, $p = .003$.

* $p < .050$.

Hypothesis 2 was not refuted. Normative variables merely accounted for 12% of public transport use variability - almost a third of the percentage accounted for recycling by normative variables. Descriptive referent beliefs and personal norms were significant predictors of public transport use. Injunctive normative beliefs emerged as a negative predictor, even though statistical significance was not reached.

Predicting organic food purchase. Injunctive normative beliefs towards organic food purchase were relatively high but no differences were found between personal and social feelings of obligation to buy organic. Considering the new and ambiguous nature of this behavior, we made no predictions towards the amount of variability that would be explained by normative variables. Our only expectation was that descriptive beliefs would emerge as good predictors (hypothesis 3). The summary of a multiple regression analysis entering normative measures is provided in Table 8.

Table 8

Summary of Multiple Regression Analysis for Normative Measures Predicting Organic Food Purchase (N = 114)

Normative measure	*B*	*SE B*	β
Descriptive	0.56	0.13	.40***
Injunctive	0.10	0.11	.08
Personal	0.21	0.08	.22*

Note. $R^2_{\text{adjusted}} = .29$, $F(3, 110) = 16.57$, $p < .001$.

* $p = .050$, *** $p < .001$.

Hypothesis 3 was not refuted. Descriptive normative beliefs emerged as significant predictors. Personal norms also predicted purchasing organic but less strongly. Furthermore, a moderated amount of organic food purchase was explained by normative variables: 29%.

Moderation Role of Injunctive Normative Beliefs

To test for the moderating role of injunctive normative beliefs in the relationship between descriptive normative beliefs and behavior, we entered multiplicative interaction terms of the descriptive and the injunctive beliefs to regression analyses. Composite measures were used only for recycling and organic food purchase. All analyses were conducted on centered scores to avoid possible problems with multicollinearity (see Aiken & West, 1991).

Hypothesis 4 was partially refuted. Moderation effects of injunctive normative beliefs did emerge for public transport use behavior but no significant effects emerged for recycling and organic food purchase. In particular, the moderation effects that emerged for sociocultural and subjective injunctive beliefs towards public transport use.

Results evidenced that neither sociocultural descriptive normative beliefs (b = .22, p = .484) nor sociocultural injunctive normative beliefs (b = -.11, p = .558) emerged as significant predictors of public transport use. However, a significant multiplicative effect revealed a moderation effect of sociocultural injunctive normative beliefs (b = -.87, p = .001; R = .32, F (3, 110) = 4.05, p =. 009). Figure 2 illustrates this effect. Using simple slopes analyses, we evidenced that the relationship between sociocultural descriptive normative beliefs and behavior was complex. It was positive, and stronger, for individuals with low sociocultural injunctive normative beliefs (defined as -1.04, one standard deviation below the mean; $\hat{Y}$ = 1.13X + .17). For individuals with high injunctive normative beliefs (defined as 1.04, one standard deviation above the mean; $\hat{Y}$ = –0.69X – .05), the relationship was negative, and relatively weaker.

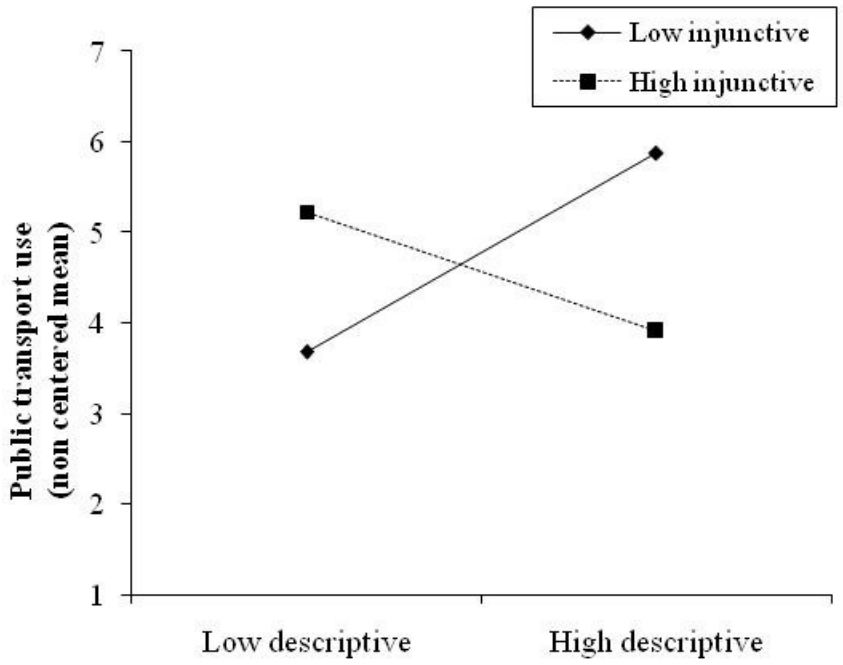


Figure 2. Moderating role of sociocultural injunctive beliefs in the relationship between sociocultural descriptive beliefs and public transport use.

Regarding subjective normative beliefs, descriptive beliefs were moderate predictors of public transport use (b = .46, p = .001) but injunctive normative beliefs did not emerge as significant predictors of this behavior (b = .05, p = .717). A significant multiplicative effect revealed the moderation of injunctive normative beliefs (b = .20, p = .007; R = .40, F (3, 110) = 7.05, p <. 001). Figure 3 illustrates this effect. The relationship between subjective descriptive normative beliefs and behavior was stronger for individuals with high injunctive normative beliefs (defined as 1.45, one standard deviation above the mean; $\hat{Y}$ = 0.76X – .08). For individuals with low injunctive normative beliefs (defined as -1.45, one standard deviation below the mean; $\hat{Y}$ = 0.17X – .23), the relationship was also positive but weaker. Results suggested an overall positive relationship between subjective descriptive normative beliefs and behavior, but

indicated that this relationship was stronger for individuals with higher subjective injunctive normative beliefs.

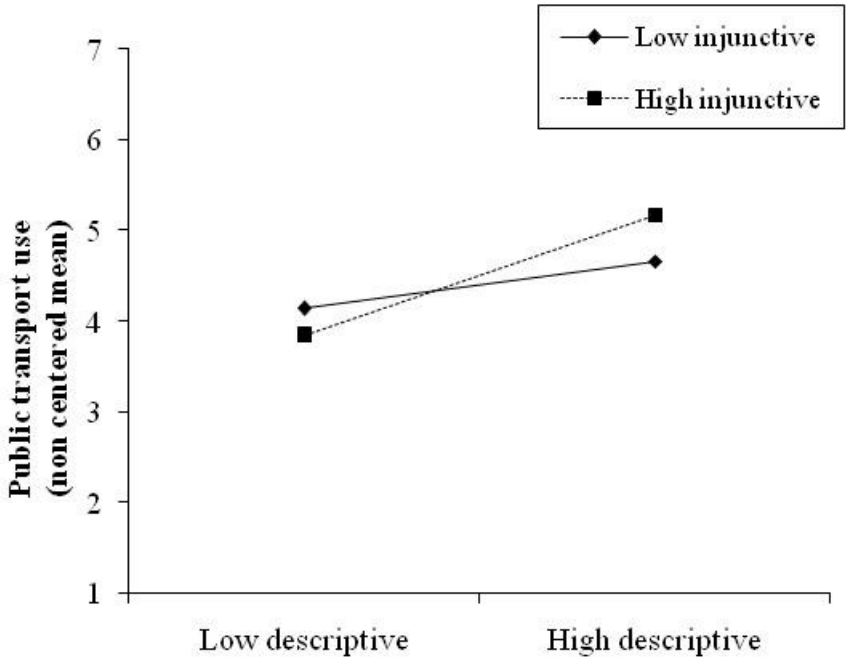


Figure 3. Moderating role of subjective injunctive beliefs in the relationship between subjective descriptive beliefs and public transport use.

Discussion

Taken as a whole, we found these study results quite promising. We believe that a systematic use of the integrative normative framework can contribute to organize, relate, and/or isolate several effects that have been separately identified in literature, as well as understand some new effects resulting from the interaction between normative variables.

Integrative Framework of Normative Influence

This research provided preliminary support for the usefulness of an integrative framework of normative influence. The personal, social descriptive and social injunctive normative beliefs (sociocultural, subjective and referent) composing the integrative framework were differently related and resumed in normative influence structures for recycling/public transport use/organic food purchase.

Regarding personal normative beliefs, they emerged distinctly from social beliefs in recycling and public transport use, issues that were found to be socially relevant and complex, but not in organic food purchase, where it emerged simultaneously with sociocultural descriptive beliefs. Other studies have found correlations between personal and descriptive beliefs (White, et al., 2009) but, to the best of our knowledge, there are no theories accounting for how these beliefs should relate. Normative influence research could benefit from theoretical development in this area.

Social normative beliefs concerning recycling and buying organic food were adequately structured in two principal components, an injunctive one and a descriptive one. Therefore, the descriptive/injunctive distinction can in fact be a dichotomy. This has allowed us to create composite social normative measures that were parsimonious

while reflecting different aspects and motivations of social normative influence. Beliefs concerning public transport use were more complex and, therefore, measures were analyzed separately. This might have led to a loss of parsimony but has allowed for an understanding on conflicting and/or parallel normative influences concerning public transport use.

Normative Influence Effectiveness and Behavior Prediction

The integrative framework of normative variables has accounted for a greater amount of behavior variability than the 12% value reported on Armitage and Conner's (2001) meta-analysis in the classes of proenvironmental behavior with effective normative influence. This suggests that both normative influence' insufficient conceptualization and ineffectiveness can contribute to weaken the relations between norms and behavior.

Normative variables accounted for 34% of recycling variability, 12% of public transport use variability, and 29% of organic food purchase variability. We considered that norms would be most effective in promoting environmental behaviors when injunctive norms were higher than descriptive norms and when personal beliefs were high. Results evidenced that the behavior with relatively less effective normative influence was that with the least variance explained (public transport use) and the behavior with relatively more effective normative influence was the one with more variance explained (recycling). Organic food purchase variability, a new and possibly ambiguous proenvironmental behavior, was also well accounted for by normative variables. We believed that, in this case, norm effectiveness was more connected with informational influence reflected in the descriptive norm. As expected, this norm was a particularly strong predictor of organic food purchase, reproducing the classic finding

that in new or ambiguous situations individuals follow on others' behavior (e.g., Deutsch & Gerard, 1955; Sherif, 1936).

Regarding proenvironmental predictors, descriptive normative beliefs consistently emerged as moderate/strong predictors in all these three classes of proenvironmental behavior. Believing that others frequently engage in these proenvironmental behaviors was positively associated with engaging in the behaviors oneself. These results replicated a well-established finding of a positive correlation between normative beliefs and proenvironmental behavior (e.g., Garvill, 1999; Göckeritz et al., 2010; Nolan et al., 2008; Staats et al., 1996). Injunctive normative beliefs did not emerge as significant predictors of any behavior. This result can be in line with reports of weak relations between social norms, traditionally conceptualized as injunctive norms, and behavior (see Armitage & Conner, 2001). As we will discuss further ahead, injunctive normative beliefs' main role might be as moderator of the relationship between descriptive beliefs and behavior.

Simultaneously with descriptive beliefs, personal normative beliefs emerged consistently as significant weak/moderated predictors of proenvironmental behaviors. Feeling that it was one's personal obligation to engage in these proenvironmental behaviors was positively associated with one actually engaging in the behaviors. These results also replicate a substantial body of evidence demonstrating a positive relation between personal norms and proenvironmental behavior (e.g., Bamberg & Möser, 2007; Bratt, 1999; De Groot & Steg, 2009; Thøgersen, & Ölander, 2006; White et al., 2009).

Moderation Role of Injunctive Normative Beliefs

Injunctive normative beliefs were found to moderate the relationship between descriptive normative beliefs and public transport use. This finding provided cumulative

evidence for Göckeritz et al.'s (2010) claim on the injunctive normative beliefs' moderating role. We believe that moderation effects might have not been found for recycling and organic food purchase due to inadequate statistical power. Aguinis (2004) has shown that one needs large sample sizes to have reasonable power to detect moderator effects. Testing for moderation effects was an additional feature of this study, not its main purpose, and therefore such considerations were not taken into account in our methodology. The effect was detected in public transport use probably because it was quite strong.

Both sociocultural and subjective injunctive normative beliefs moderated the relationship between descriptive normative beliefs and public transport use. The principal component analysis of social normative beliefs concerning public transport had already evidenced complex data relations. Moderation analysis confirmed this complexity by evidencing different effects of sociocultural and subjective injunctive beliefs.

The moderation of sociocultural injunctive beliefs in the relationship between sociocultural descriptive beliefs and behavior was quite intricate. On one hand, the relationship was positive and stronger for individuals with low sociocultural injunctive beliefs. That is, when individuals believed less strongly that most people approved of using public transportation, the relationship between believing that most people used public transports and actually using it oneself was stronger. This result posed an interesting question for future research: why the more individuals use public transportation, the more they perceive injunctive norms to be low, or vice-versa, (an accurate perception according with this study's results) but they did not perceive descriptive norms to be also low? For public transport users it is simple and immediate to perceive how most others travel. Unlike recycling and organic food purchase,

transportation can be a salient part of most people's everyday life. Sociocultural descriptive contextual clues are in plain sight. Could it be that (a) specific factors associated with public transport, like crowding, increase the perception that most people use it, or (b) most individuals only use public transportation because they have no private means, as was true for the majority of respondents, and the increase in descriptive beliefs reflects a coping strategy?

On the other hand, the relationship between sociocultural descriptive beliefs and behavior was negative for individuals with high sociocultural injunctive beliefs. When individuals strongly believed most people approved of using public transportation, the individuals' average use of public transports was higher, even when they did not strongly believe most people used public transports. When individuals strongly believed most others were using public transportation the average use of public transportation was lower. This result was unexpected. Individual behavior was expected to have a positive overall relation with descriptive norms. Accordingly to research using the focus theory of normative conduct, adding injunctive information to different types of descriptive information leads to injunctive norm congruent behavior (e.g., Schultz et al., 2007). An alternative explanation can be provided by the social dilemmas framework, in particular by the commons dilemma (Hardin, 1968; see Messick & Brewer, 1983). Accordingly to this dilemma, individuals often engage in an action that draws resources from a common pool, such as using private transportation (instead of public). This type of behavior is often the best option, in terms of comfort or convenience, for the individual. However, it is at odds with collective interest and can lead to resource exhaustion (see Palma-Oliveira, 2000). In line with this framework, if one strongly believes others approve of using public transportation and perceives most others are indeed using public transportation, then fewer resources are being drawn by the

common pool and more resources become available to the individual. This could relate to lesser use of public transportation, a defective behavior. On the other hand, if one perceives most people strongly approve of using public transportation but are not actually using it, then more resources are being drawn by the common pool and less resources are available to the individual. This could relate to a greater use of public transports, a cooperative behavior.

The relationship between subjective descriptive beliefs and behavior was much simpler. It was overall positive but relatively stronger for individuals with high subjective injunctive beliefs, in accordance with the focus theory of normative conduct and replicating Göckeritz et al.'s results (2010). Believing that important others used public transportation had a stronger connection with using it oneself when individuals believed more strongly that important others also approved of using it.

Different implications can be drawn from the focus theory of normative conduct and the social dilemmas framework (see Göckeritz et al., 2010). For future research it would be important to explain if/how these theories can be integrated. For instance, it might be that the social dilemmas framework is more useful to understand sociocultural normative beliefs whereas the focus theory of normative conduct is better at explaining subjective or referent beliefs. Moreover, we believe it might be important to better understand the role of injunctive and descriptive norms in the social dilemmas framework.

References

Aguinis, H. (2004). *Moderated regression*. New York: Guilford.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179–211.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic review. *British Journal of Social Psychology, 40*, 471–499.

Arvola, A. A., Vassallo, M. M., Dean, M. M., Lampila, P. P., Saba, A. A., Lähteenmäki, L. L., & Shepherd, R. R. (2008). Predicting intentions to purchase organic food: The role of affective and moral attitudes in the Theory of Planned Behaviour. *Appetite*, *50*, 443–454.

Bagozzi, R., & Warshaw, P. (1990). Trying to consume. *Journal of Consumer Research*, *17*, 127–140.

Bamberg, S., Hunecke, M., & Blöbaum, A. (2007). Social context, personal norms, and the use of public transportation: Two field studies. *Journal of Environmental Psychology, 27,* 190–203.

Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, & Tomera: A new meta-analysis of psych-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology, 27,* 14–25.

Bamberg, S., & Schmidt, P. (2003). Incentives, morality or habit? Predicting students' car use for university routes with the models of Ajzen, Schwartz and Triandis. *Environment and Behavior*, *35*, 264–285.

Bratt, C. (1999). The impact of norms and assumed consequences on recycling behavior. *Environment and Behavior*, *31*, 630–656.

Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Current Directions in Psychological Science*, *12*, 105–109.

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. In S. T. Fiske, D. L. Schacter, & C. Zahn-Waxler (Eds.), *Annual review of psychology* (Vol. 55, pp. 591–621). Palo Alto, CA: Annual Reviews.

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 201–234). San Diego, CA: Academic Press.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58,* 1015–1026.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity, and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 151–192). New York, NY: McGraw-Hill.

David, B., & Turner, J. C. (2001). Majority and minority influence: A single process selfcategorization analysis. In C. K. W. De Dreu & N. K. De Vries (Eds.), *Group consensus and minority influence: Implications for innovation* (pp. 91-121). Oxford, UK: Blackwell.

De Groot, J., & Steg, L. (2009). Morality and prosocial behavior: The role of awareness, responsibility, and norms in the norm-activation model. *Journal of Social Psychology, 149,* 425–449.

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influence upon individual judgment. *Journal of Abnormal and Social Psychology*, *51*, 629–63.

Ebreo, A., Hershey, J., & Vining, J. (1999). Reducing solid waste: Linking recycling to environmentally responsible consumerism. *Environment and Behavior*, *31*, 107–135.

Epley, N., & Gilovich, T. (1999). Just going along: Nonconscious priming and conformity to social pressure. *Journal of Experimental Social Psychology, 35,*578–589.

Fishbein, M., & Ajzen. I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research. Reading, MA: Addison Wesley.

Gaspar de Carvalho, R. (2009). *Consistent… me? Barriers and constraints on proenvironmental behavior.* Doctoral dissertation in Social Psychology. University of Lisbon, Lisbon.

Garvill, J. (1999). Choice of transportation mode: Factors influencing driver's willingness to reduce personal car use and support car regulations. In M. Foddy, M. Smithson, S. Schneider, & M. Hogg (Eds.), *Resolving social dilemmas: Dynamic, structural, and intergroup aspects* (pp. 253–262). Philadelphia: Psychology Press.

Göckeritz, S., Schultz, P., Rendón, T., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2010). Descriptive normative beliefs and conservation behavior: The moderating roles of personal involvement and injunctive normative beliefs. *European Journal of Social Psychology*, *40*, 514–523.

Hardin, G. (1968). The tragedy of the commons. *Science*, *162*, 1243–1248.

Hogg, M. A., & Turner, J. C. (1987). Social identity and conformity: A theory of referent informational influence. In W. Doise & S. Moscovici (Eds.), *Current issues in European social psychology* (Vol. 2, pp. 139 – 182). New York: Cambridge University Press.

Hopper, J. R., & Nielsen, J. M. (1991). Recycling as altruistic behavior. Normative and behavioral strategies to expand participation in a community recycling program. *Environment and Behavior*, *23*, 195–220.

Hunecke, M., Haustein, S., Böhler, S., & Grischkat, S. (2010). Attitude-based target groups to reduce the ecological impact of daily mobility behavior. *Environment and Behavior*, *42*, 3–43.

Instituto Nacional de Estatística (2003). Movimentos pendulares na área metropolitana de Lisboa 1991-2001. Instituto Nacional de Estatística, Lisboa.

Instituto Nacional de Estatística (2009). Indicadores agro-ambientais 1989-2007. Instituto Nacional de Estatística, Lisboa.

Instituto Nacional de Estatística (2010). Gestão de resíduos em Portugal 2004-2009. Instituto Nacional de Estatística, Lisboa.

Jacobson, R. P., Mortensen, C. R., & Cialdini, R. B. (2011). Bodies obliged and unbound: Differentiated response tendencies for injunctive and descriptive social norms. *Journal of Personality and Social Psychology*, *100*, 433–448.

Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin, 26,* 1002–1012.

Kurz, T., Linden, M., & Sheehy, N. (2007). Attitudinal and community influences on participation in new curbside recycling initiatives in Northern Ireland. *Environment & Behavior*, *39*, 367–391.

Lodorfos, G. N., & Dennis, J. (2008). Consumers' intent: in the organic food market. *Journal of Food Products Marketing*, *14*, 17–38.

Manstead, A. S. R. (2000). The role of moral norm in the attitude–behavior relation. In D. J. Terry & M. A. Hogg (Eds.), *Attitude, behavior, and social context: The role of norms and group membership* (pp. 11–30). Mahwah, NJ: Erlbaum.

Messick, D. M., & Brewer, M. B. (1983). Solving social dilemmas: A review. In L. Wheeler & P. Shaver (Eds.), *Review of personality and social psychology* (pp. 11-44). Beverly Hills: Sage.

Nolan, J., Schultz, P. W., Cialdini, R. B., Griskevicius, V., & Goldstein, N. (2008). Normative social influence is underdetected. *Personality and Social Psychology Bulletin*, *34,* 913-923.

Nordlund, A. M., & Garvill, J. (2003). Effects of values, problem awareness, and personal norm on willingness to reduce personal car use. *Journal of Environmental Psychology*, *23*, 339–347.

Ölander, F., & Thøgersen, J. (1995). Understanding consumer behavior as prerequisite for environmental protection. *Journal of Consumer Policy*, *18*, 345-385.

Oom do Valle, P., Rebello, E., Reis, E., & Menezes, J. (2005). Combining behavioural theories to predict recycling involvement. *Environment and Behavior*, *37*, 364–396.

Palma-Oliveira, J.M. (2000). A New Theory for the Explanation of the NIMBY Effect. In M. Cottam, D. Harvey, R. Pape & J. Tait (Eds.), *Foresight and Precaution* (pp. 1167–1171). Rotterdam: A. A. Balkema Publishers.

Palma-Oliveira, J. M. (2011). Homo sapiens versus homo artiflex: ou a inevitabilidade (?) da destruição ambiental. In B. Fernandez-Ramirez, C. Hidalgo, C. Salvador, &

M. Martos, *Psicologia Ambiental: Entre os estudios urbanos y el análisis de la sustentabilidad* (pp. 23-40). Almeria: Universidade de Almeria, PSICAMB.

Pepitone, A. (1976). Toward a normative and comparative biocultural social psychology. *Journal of Personality and Social Psychology*, 34, 641-653.

Reno, R. R., Cialdini, R. B., & Kallgren, C. A. (1993). The transsituational influence of social norms. *Journal of Personality and Social Psychology, 64,* 104–112

Schultz, P. W., & Kaiser, F. (in press). Promoting proenvironmental behavior. In S. Clayton (Ed.), *Handbook of Environmental and Conservation Psychology.* Oxford University Press.

Schultz, P. W., Khazian, A., & Zaleski, A. (2008). Using normative social influence to promote conservation among hotel guests. *Social Influence*, *3,* 4–23.

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science, 18,* 429–434.

Schwartz, S. H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 221–279). San Diego, CA: Academic Press.

Sherif, M. (1936). *The psychology of social norms*. New York: Harper.

Staats, H. J., Wit, A. P., & Midden, C. Y. H. (1996). Communicating the greenhouse effect to the public: Evaluation of a mass media campaign from a social dilemma perspective. *Journal of Environmental Management*, *45*, 189–203.

Stern, P., Dietz, T., Abel, T., Guagnano, G. A.,& Kalof, L. (1999).A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, *6*, 81–97.

Stevens, J. (2002). *Applied Multivariate Statistics for the Social Sciences (4th Edition)*. Mahwah, NJ:Lawrence Erlbaum Associates.

Thøgersen, J., & Ölander, F. (2006). The dynamic interaction of personal norms and environment-friendly buying behavior: A panel study. *Journal of Applied Social Psychology*, *36*, 1758–1780.

Triandis, H. (1977). *Interpersonal behaviour*. Monterey, CA: Brooks/Cole.

Vining, J., & Ebreo, A. (1990). What makes a recycler? A comparison of recyclers and non-recyclers. *Environment and Behavior*, *22*, 55–73.

White, K. M., Smith, J. R., Terry, D. J., Greenslade, J. H., McKimmie, B. M. (2009). Social influence in the theory of planned behaviour: The role of descriptive, injunctive, and in-group norms. *British Journal of Social Psychology*, *48*, 135–158.

APPENDIX

O comportamento é um aspecto central para a qualidade de vida e o bem-estar. Esta investigação tem como objectivo conhecer a realidade de comportamentos muito específicos que afectam o quotidiano das pessoas. Pedimos que colabore fornecendo-nos as suas experiências relativamente a alguns desses comportamentos.

Este estudo é anónimo e os dados recolhidos serão apenas submetidos a análises estatísticas, não sendo utilizados para qualquer outro fim.

Obrigado pela sua colaboração!

Instruções

Vamos pedir-lhe para expressar a sua opinião relativamente a uma série de afirmações e questões utilizando as escalas de resposta que fornecemos.

Geralmente, as escalas variam em 7 pontos de acordo com as características indicadas. Por exemplo, para a escala de "concordância", existe a seguinte correspondência:

1. Discordo totalmente
2. Discordo bastante
3. Discordo
4. Discordo e concordo
5. Concordo
6. Concordo bastante
7. Concordo totalmente

Assim, caso uma pessoa discorde de determinada afirmação deve colocar uma cruz no espaço correspondente ao valor 3.

Atenção: Não há respostas certas ou erradas!

Pedimos para indicar a sua opinião pessoal relativamente a cada uma das questões, respondendo em função da sua **experiência pessoal** de forma **espontânea**.

Algumas afirmações referem-se ao comportamento de outras pessoas. Se por acaso nunca observou o comportamento dessas pessoas na situação em questão responda pensando no que dizem acerca da situação ou como se poderiam comportar.

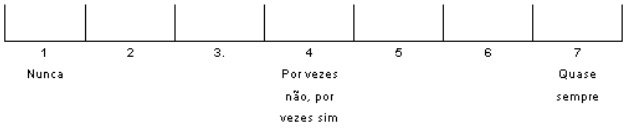
Dados sócio-demográficos

Sexo: _____	Idade: ___	Curso: _____

RR) Comportamento: Separar e colocar os resíduos nos contentores adequados para se proceder à reciclagem (para abreviar "**reciclar**").	1. Discordo totalmente	2	3	4. Discordo e concordo	5	6	7. Concordo totalmente
1. Na nossa sociedade, geralmente as pessoas reciclam.							
2. Reciclar é um comportamento aprovado na nossa sociedade, independentemente de ser ou não cumprido.							
3. Reciclar é um comportamento pouco habitual na nossa sociedade.							
4. Reciclar é um comportamento desejável na nossa sociedade.							
5. A maioria das pessoas recicla.							
6. A maioria das pessoas aprova que se recicle, se bem que na prática possa ou não verificar-se.							
7. Para a maioria das pessoas é desejável que se recicle.							
8. As pessoas com as quais eu me identifico (*isto é, as pessoas que têm uma maneira de ser e estar semelhante à que desejo para mim*) consideram que é apropriado reciclar.							
9. As pessoas com as quais eu me identifico reciclam.							
10. As pessoas que são importantes na minha vida (*isto é, as pessoas que interferem na minha vida, independentemente de eu me identificar ou não com elas*) aprovam que se recicle.							
11. As pessoas que são importantes na minha vida reciclam.							
12. *Reciclar é um comportamento que tem consequências (positivas ou negativas) para as outras pessoas.							
13. Acredito que os resíduos são para reciclar.							

a) Nas duas últimas semanas, **quantas vezes** tratou dos resíduos, independentemente de ter ou não reciclado?

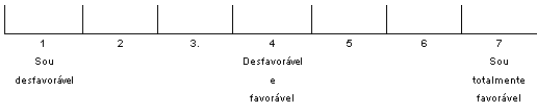
b) Quando trata dos resíduos **recicla**?



***c) Pessoalmente**, o que considera acerca do comportamento "reciclar"?

c.1) Gosto, *independentemente de estar a favor*

c.2) Estou a favor, *independentemente de gostar*



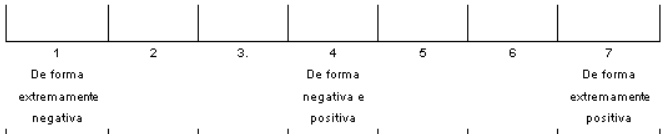
---

d) Imagine que vai **tratar dos resíduos** e pode escolher entre **reciclar ou não reciclar**.

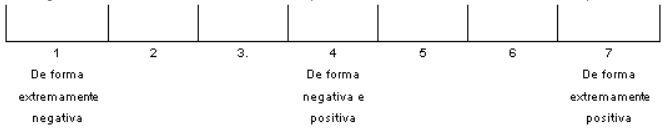
d.1) Sentiria **obrigação pessoal** ou moral em relação a reciclar?

d.2) Consideraria a posição das outras pessoas relativamente a reciclar?

d.3) Como se **sentiria relativamente a si** se <u>não</u> reciclasse?



d.4) Como se **sentiria relativamente às outras pessoas** se <u>não</u> reciclasse?



***e)** Em **Portugal**, qual a percentagem de pessoas que **reciclam**? _____% (*<u>escala 0-100%</u>*)

e.1) Qual a **sua certeza** quanto à resposta anterior (e)? _____% (*<u>escala 0-100%</u>*)

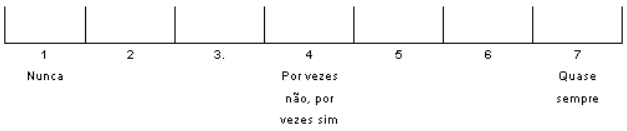
***f)** Em **Portugal**, qual a percentagem de pessoas que consideram que se **deve reciclar**? _____% (*<u>escala 0-100%</u>*)

f.1) Qual a **sua certeza** quanto à resposta anterior (f)? _____% (*<u>escala 0-100%</u>*)

TC) Comportamento: Viajar através dum transporte do tipo colectivo (ex., autocarro ou metro)**.**	1. Discordo totalmente	2	3	4. Discordo e concordo	5	6	7. Concordo totalmente
1. Na nossa sociedade, geralmente as pessoas viajam de transporte colectivo.							
2. Viajar de transporte colectivo é um comportamento aprovado na nossa sociedade, independentemente de ser ou não cumprido.							
3. Viajar de transporte colectivo é um comportamento pouco habitual na nossa sociedade.							
4. Viajar de transporte colectivo é um comportamento desejável na nossa sociedade.							
5. A maioria das pessoas viaja de transporte colectivo.							
6. A maioria das pessoas aprova que se viaje de transporte colectivo, se bem que na prática possa ou não verificar-se.							
7. Para a maioria das pessoas é desejável que se viaje de transporte colectivo.							
8. As pessoas com as quais eu me identifico (*isto é, as pessoas que têm uma maneira de ser e estar semelhante à que desejo para mim*) consideram que para viajar é apropriado utilizar transportes colectivos.							
9. As pessoas com as quais eu me identifico viajam de transporte colectivo.							
10. As pessoas que são importantes na minha vida (*isto é, as pessoas que interferem na minha vida, independentemente de eu me identificar ou não com elas*) aprovam que se viaje de transporte colectivo.							
11. As pessoas que são importantes na minha vida viajam de transporte colectivo.							
12. *Viajar de transporte colectivo é um comportamento que tem consequências (positivas ou negativas) para as outras pessoas.							
13. Acredito que as viagens são para se realizar de transporte colectivo.							

a) Nas duas últimas semanas, **quantas vezes** utilizou transportes (colectivos ou individuais) para se deslocar?

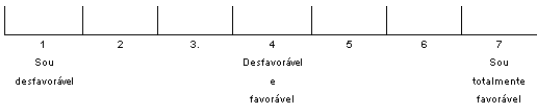
b) Quando viaja **utiliza** o transporte colectivo?



***c) Pessoalmente**, o que considera acerca do comportamento "viajar em transporte colectivo"?

c.1) Gosto, *independentemente de estar a favor*

c.2) Estou a favor, *independentemente de gostar*



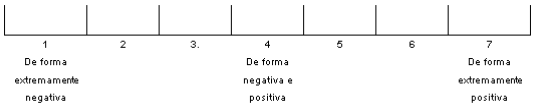
---

d) Imagine que vai **viajar** e pode escolher entre o **transporte colectivo e o individual** (o carro).

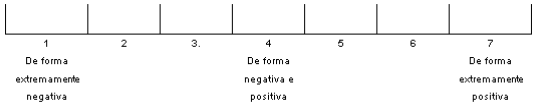
d.1) Sentiria **obrigação pessoa**l ou moral para viajar de transporte colectivo?

d.2) Consideraria a posição das outras pessoas relativamente a viajar de transporte colectivo?

d.3) Como se **sentiria relativamente a si** se não viajasse de transporte colectivo?



d.4) Como se **sentiria relativamente às outras pessoas** se não viajasse de transporte colectivo?



---

e) Viaja de **transporte individual**?

Sim, *como condutor* ☐ Não, *prefiro os transportes colectivos* ☐

Sim, *como passageiro* ☐ Não, *não possuo transporte individual* ☐

***f)** Em **Portugal**, qual a percentagem de pessoas que **viajam** de transporte colectivo? _____ % (*escala 0 - 100%*)

f.1) Qual a **sua certeza** quanto à resposta anterior (f)? _____ % (*escala 0 -100%*)

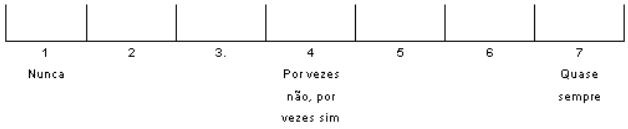
***g)** Em **Portugal**, qual a percentagem de pessoas que consideram que se **deve** viajar de transportes colectivos? _____ % (escala *0 -100%*)

g.1) Qual a **sua certeza** quanto à resposta anterior (g)? _____ % (*escala 0 -100%*)

AB) Comportamento: Comprar produtos alimentares de agricultura biológica (ex., vegetais biológicos, leite biológico, carne biológica). *Nota: Biológico refere-se à forma como os produtos alimentares são cultivados e processados*.	1. Discordo totalmente	2	3	4. Discordo e concordo	5	6	7. Concordo totalmente
1. Na nossa sociedade, geralmente as pessoas compram produtos alimentares de agricultura biológica.							
2. Comprar produtos alimentares de agricultura biológica é um comportamento aprovado na nossa sociedade, independentemente de ser ou não cumprido.							
3. Comprar produtos alimentares de agricultura biológica é um comportamento pouco habitual na nossa sociedade.							
4. Comprar produtos alimentares de agricultura biológica é um comportamento desejável na nossa sociedade.							
5. A maioria das pessoas compra produtos alimentares de agricultura biológica.							
6. A maioria das pessoas aprova que se compre produtos alimentares de agricultura biológica, se bem que na prática possa ou não verificar-se.							
7. Para a maioria das pessoas é desejável que se compre produtos alimentares de agricultura biológica.							
8. As pessoas com as quais eu me identifico (*isto é, as pessoas que têm uma maneira de ser e estar semelhante à que desejo para mim*) consideram que é apropriado comprar produtos alimentares de agricultura biológica.							
9. As pessoas com as quais eu me identifico compram produtos alimentares de agricultura biológica.							
10. As pessoas que são importantes na minha vida (*isto é, as pessoas que interferem na minha vida, independentemente de eu me identificar ou não com elas*) aprovam que se compre produtos alimentares de agricultura biológica.							
11. As pessoas que são importantes na minha vida compram produtos alimentares de agricultura biológica.							
12. *Comprar produtos alimentares de agricultura biológica é um comportamento que tem consequências (positivas ou negativas) para as outras pessoas.							
13. Acredito que os produtos alimentares são para se comprar do tipo biológico.							

a) Nas duas últimas semanas, **quantas vezes** comprou produtos alimentares (biológicos ou não)?

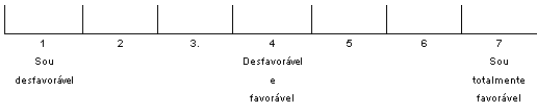
b) Quando compra produtos alimentares **escolhe** os do tipo biológico?



***c) Pessoalmente**, o que considera acerca do comportamento "comprar alimentos biológicos"?

c.1) Gosto, *independentemente de estar a favor*

c.2) Estou a favor, *independentemente de gostar*

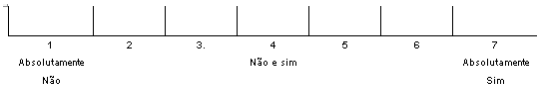


---

d) Imagine que vai **comprar produtos alimentares** e pode **escolher entre os de agricultura biológica e os que não são** de agricultura biológica.

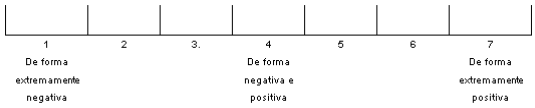
d.1) Sentiria **obrigação pessoal** ou moral para comprar os biológicos?

d.2) Consideraria a posição das outras pessoas relativamente a comprar os biológicos?



d.3) Como se **sentiria relativamente a si** se <u>não</u> comprasse os biológicos?

d.4) Como se **sentiria relativamente às outras pessoas** se <u>não</u> comprasse os biológicos?



***e)** Em **Portugal**, qual a percentagem de pessoas que **compram** produtos alimentares biológicos? _____ % (*escala 0 -100%*)

e.1) Qual a **sua certeza** quanto à resposta anterior (e)? _____ % (*escala 0 -100%*)

*** f)** Em **Portugal**, qual a percentagem de pessoas que consideram que se **deve** comprar produtos alimentares biológicos? _____ % (*escala 0 -100%*)

f.1) Qual a **sua certeza** quanto à resposta anterior (f)? _____ % (*escala 0 -100%*)

Questions marked with * were not analyzed in this manuscript.

Study 2

No Smoking in Public Places: Normative Beliefs Change[1]

Sílvia Luís and José Palma-Oliveira

Lisbon University

[1] Manuscript submitted for publication in *Social Influence*.

Abstract

An understanding of the effects of laws on normative beliefs might be crucial for effective regulatory policy. Laws cannot reach a big part of everyday life, norms can. This study was a natural experiment which explored how implementing a smoking ban in public places affected normative beliefs. Several measures were collected during the time the law went into effect in Portugal, in three distinct times. In accordance with the focus theory of normative conduct postulate of normative salience (R. B. Cialdini, R. R. Reno, & C. A. Kallgren, 1990), and with the strong effects descriptive norms have in novel situations, results evidenced that largest increases emerged in sociocultural beliefs (descriptive and injunctive) and in subjective descriptive normative beliefs. Measures towards being silent in the library that were simultaneously collected did not diverge over time, providing indirect support for the fact that normative beliefs increase was related to the smoking ban.

Keywords: normative beliefs; smoking ban; focus theory of normative conduct.

No Smoking in Public Places:

Normative Beliefs Change

Not long ago, cigarette smoke was present in Portuguese people everyday life. It was common to find individuals smoking in restaurants, universities, public transportations, or malls. Those who claimed to be bothered by smoking were probably seen as unreasonably demanding. Cigarettes have also been a symbol of glamour and were often used in the movies industry. For instance, part of Marlene Dietrich charm lied in her cigarette. Nowadays, smoking glamour has been left behind. Cigarettes are probably more associated with an unhealthy than with a glamorous lifestyle. Furthermore, smoking in public places is being banned by law in countries all over the world.

Researchers have recently started to publish studies of the effects of smoking bans. Their focus has been mostly on smoking behavior cessation or diminution (see Al-Delaimy et al., 2007; Messer et al., 2007; Orbell et al., 2009; Zhang, Cowling, & Tang, 2010). This study's research questions were different. We intended to explore if and how different normative beliefs changed. The study was conducted during the time a law banning smoking in all public places was implemented in Portugal (2008/2009). The smoking ban was a natural manipulation that was expected to trigger the change. A design conceptually similar to a quasi-experimental study with a multiple separate pre-post sample design was put forward.

Norms Theoretical Background

Social psychologists have studied different types of norms. Norms were found to have different origins: (a) in society in general, the sociocultural norms (Pepitone, 1976); (b) in important others, the subjective norms (Fishbein & Azjen, 1975); and (c) in others with whom individuals identify, the referent norms (e.g., Hogg & Turner, 1987). In addition, norms can specify what is normally done by people, descriptive norms, or what ought to be done, injunctive norms (e.g., Cialdini, Reno, & Kallgren, 1990). Whereas the descriptive norm provides information that is relevant for behaving effectively or accurately, in a way that is advantageous for the individual, the injunctive norm is relevant for the interpersonal goal of building and maintaining social relationships (see Cialdini & Trost, 1998; Cialdini & Goldstein, 2004). Researchers have traditionally privileged the injunctive nature of norms. Some researchers argue that, in fact, descriptive/injunctive might be a false dichotomy (see David & Turner, 2001). In most cases the two types of norms are interrelated, both theoretically and empirically, "*what is approved is often what is typically done*" [italics added] (Cialdini et al., 1990, p. 1015). Nonetheless, there is a substantial body of evidence demonstrating descriptive and injunctive norms differential influences on a variety of behaviors (e.g., Borsari & Carey, 2003; Cialdini et al., 1990; Cialdini, Kallgren, & Reno, 1991; Larimer & Neighbors, 2003; Reno, Cialdini, & Kallgren, 1993; Rivis & Sheeran, 2003; Schultz, 1999; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). Therefore, we found it was relevant to distinguish between the injunctive and the descriptive nature of sociocultural, subjective, and referent normative beliefs.

Norms can also originate from another agent of influence: (d) the self, personal norms. Schwartz (1977) has proposed that individuals had self-expectations for their behavior that were enforced through the anticipation of self-enhancement or self-

deprecation. Schwartz's norm activation model includes three variables to explain prosocial behavior: personal norms, referred to as a feeling a moral obligation, awareness of consequences when not acting prosocially, and ascription of responsibility for the consequences of not acting prosocially. Recent findings suggest that prosocial behavior may be promoted by first increasing awareness and then raising responsibility for the problems, which strengthens feelings of moral obligation (De Groot & Steg, 2009).

The question of which norm would become active to influence behavior has been directly and systematically addressed by Cialdini and colleagues' research in their development of the focus theory of normative conduct. The theory postulates that a norm, descriptive or injunctive, social or personal, is unlikely to influence behavior unless it is focal, i.e., salient, for an individual at the time of behavior. Cialdini and colleagues' initial research was applied to littering behavior. Cialdini et al. (1991; 1990) have demonstrated, in series of field studies, that injunctive and descriptive norms could be differently manipulated to become more contextually salient and influence behavior. Moreover, Kallgren, Reno, and Cialdini (2000) have evidenced that the use of procedures that made individuals focus more on themselves or on the situation moderated the degree to which the personal norm was likely to guide behavior. When participants' attention was focused away from themselves, even strong personal norms regarding littering were not predictive of relevant behavior; when participants' attention was focused on themselves strong personal norms became quite predictive. The focus theory of normative conduct has been mostly applied to specific descriptive and injunctive normative manipulations. In this study we have extended its postulate of salience to sociocultural, subjective, referent and personal norms in order to make predictions concerning the individual's normative beliefs change.

In addition, Paicheler's (1976/1977) work reminded us of the importance of understanding the actual content of normative change. Paicheler evidenced that a minority's influence depended upon its ability to persuade others by arguing that that change was the evolutionary trend and it would soon be the norm. Social influence and change could either lead to innovation, greater conservatism or an earlier state of affairs. What mattered was how individuals perceived this evolution and how the norm evolution was actualized in the groups. Despite the fact that this study is focused in the individual's perceptions, it's necessary to recall that perceptions are framed in historical, sociological and economic aspects.

Social Norms and Law

There are no doubts about the severe health consequences of smoking, either active smoking or passive smoking (e.g., Giannini et al., 2007). The Portuguese parliament passed a law banning smoking in all public places that went into effect on the 1st of January of 2008. This study focused on the influences the law banning smoking in public places has on individual's normative beliefs towards no smoking in public places.

Social psychologists have long been studying norms (e.g., Asch, 1955; Cialdini et al., 1990; Milgram, 1963; Schwartz, 1977; Sheriff, 1936). Social norms do not influence behavior because of legal consequences. "*Social norms are rules and standards that are understood by members of a group, and that guide and/or constrain social behavior without the force of laws. These norms emerge out of interaction with others; they may or may not be stated explicitly, and any sanctions for deviating from them come from social networks, not the legal system*" [italics added] (Cialdini & Trost, 1998, p. 152). Neither do personal norms. Norms influence behavior because they guide

individuals towards actions that are perceived as accurate and precise. Norms also allow individuals to build and maintain relationships with others, and permit individuals to maintain a positive self-concept (Cialdini & Trost, 1998; Cialdini & Goldstein, 2004; Jacobson, Mortensen, & Cialdini, 2011). However, the questions of if and how laws influence normative beliefs have, as far as we know, been underinvestigated.

To understand the social effects of laws is important for both social researchers and lawmakers. An understanding of normative beliefs may be relevant for effective regulatory policy because law enforcement cannot reach a large part of everyday life (see Ellickson, 1991; Posner, 2000). Many of the most dramatic gains in health and safety policies are product of norm changes (Sunstein, 1997).

Social psychologists argued that, in order to construct norms, individuals have to infer and mentally represent other people's thoughts, feelings and behaviors. These inferences can be made based on observable behavior (e.g., observing that others only smoke in designated areas), direct or indirect communications (e.g., no-smoking signs), and, in the absence of these, on the individual's owns thoughts, feelings and behavior (see Miller & Prentice, 1996). Economists have provided a more comprehensive theorization distinguishing three ways by which norms become established and change over time: (a) top-down influences, including laws and official edicts; (b) bottom-up influences, the type of norms studied by social psychologists; and (c) lateral influences, in which established norms from one type of interaction are transferred to related types of interactions (Durlauf & Blume, 2008). Evolution of norms is then expected to be a complex process involving the interplay of many different forces. Law is just one example. Law operates partly from the top down: statutes and judicial rulings identify norms of acceptable behavior. At the same time, the boundary between acceptable and unacceptable behavior is constantly in flux due to variations in the way individual cases

are resolved by courts or by informal groups of individuals (a bottom-up effect). Precedents in one domain can be transferred by analogy to other domains (a lateral effect).

Therefore, both from a psychological and a more general perspective, it is quite plausible that laws do, in fact, influence norms. The outcome of this influence, however, might not be congruent with the law itself. Legal changes do not necessarily lead to social acceptance. An example is what happened with regulations of the legal limit of driver's blood alcohol in Portugal. In 2001 the Portuguese government lowered the legal limit of blood alcohol concentration, from 0.5 mg/ml to 0.2 mg/ml, while driving. Several scientific studies had demonstrated that driving skills were already impaired for 0.1–0.2 mg/ml levels, and the risk of a fatal accident doubled for 0.5 mg/ml, in comparison with 0.2 mg/ml. (e.g., Zador, Krawchuk, & Voas, 2001). Moreover, the European Commission had recommended that limits below 0.5 mg/ml should be progressively implemented. As such, Portugal should have proudly become the Southern European country with the lowest limit and the Portuguese should have felt safer while driving. On the contrary, this legal change struggled against such a high level of social and economic contestation that the Portuguese government had to step back. In 2002 the legal limit of driver's blood alcohol concentration returned to being 0.5 mg/ml. Furthermore the number of drivers detected with high levels of blood alcohol concentration is considered high.

The Present Research

This study's main purpose was to analyze if and how normative beliefs towards no smoking in public places evolved in time. Therefore we measured normative, attitudinal, and behavioral variables one month before the legal change (Time 1), six

months after the legal change (Time 2), and one year after the legal change (Time 3). The effects of behavior, smoking, and respondent's university on normative measures were also explored.

This study was a natural experiment (see Festinger & Katz, 1966). One of the advantages of natural experiments over laboratory or field experiments is that manipulations usually have more powerful effects. One limitation was the lack of control of the conditions that influenced social norms change and the impossibility to have a control group. As a result, this study was conceived to be as similar as possible to a quasi-experimental study with a multiple separate pre-post sample design (see Campbell & Stanley, 1963; Christensen, 1997).

The effects of the legal change on the variables under study were assessed by comparing the pattern of results before and after the legal change. We used a separate pre-post sample design, not a standard pre-post design, because the whole population would be affected by the legal change, and, hence, we did not have to inquiry the same person more than once. Additionally, in an effort to minimize the influence of extraneous variables, we have opted for a multiple-design-type approach by measuring normative beliefs concerning content. This content was not expected to be affected by this legal change and had previously been proven to be a well-established norm among the students' population: being silent in the library (Aarts, & Dijksterhuis, 2003). Testing for differences in measures towards being silent in the library in the different moments allowed for the elimination or minimization of some of the potential rival hypotheses for the effects of the smoking ban on the measures we have assessed (for instance, that changes were merely related to natural variations in social measures, measurement errors, or to the use of different pre-post change samples).

We collected several normative measures as such the nature of our hypotheses was rather broad. For exploratory purposes we also collected attitudinal and behavior measures.

Time effects. We expected an increase in normative beliefs. Following on Paicheler's framework (1976/1977), we expected that the smoking ban would be perceived as the proper evolutionary trend, increasing the possibility of public obedience and approval. Passive smoking had become a well discussed issue over the last years and the approval of the ban in Portugal was following similar government action in nearby countries (e.g., Spain in 2006; Italy in 2005; France in 2007).

However, we did not expect an equal increase in all normative measures towards no smoking in public places. Accordingly to the focus theory of normative conduct (Cialdini et al, 1991; 1990), it remains possible to examine effects of different norms because these are determined by the norm's subjective salience, not by its objective availability. Considering we were measuring the effects of a legal top-down change, we expected that individuals would perceive a greater pressure of distal than of proximal sources of influence. Therefore, we expected sociocultural and subjective normative beliefs to increase more than referent normative beliefs. Distinguishing between the descriptive or injunctive nature of the norms, we expected descriptive norms, i.e. where others smoke and do not smoke, to be highly salient. In general, individuals are most likely to use descriptive information in order to decide the most effective course of action when the situation is new, ambiguous, or uncertain (Deutsch & Gerard, 1955; Sherif, 1936). Smokers would stop smoking in public places and start smoking only in smoking designated areas. In addition, Jacobson et al. (2011) suggested that descriptive norms may be more effective than injunctive ones when preexisting injunctive norms are mixed. We believe this could have the case before the implementation of the

smoking ban: some approved the smoking ban whereas others did not. As such, we expected that descriptive normative beliefs would increase more than injunctive normative beliefs. In other words, believing others did not smoke in public places would increase more than believing others approved of not smoking in public places.

Considering the smoking ban was an imposed change that had occurred in context, not in the individuals, personal normative beliefs should not increase much. However, one could also argue that the change was implemented exactly because most individuals were already changing. Therefore, we made no claims and merely explored personal normative beliefs evolution. Two measures of Schwartz's norm activation model were assessed: awareness of the consequences of smoking in public places and personal obligation, i.e. feelings of personal obligation towards not smoking in public places. Considering it is plausible for one to be aware of the consequences of one's behavior before feeling responsible to engage in behavior (see De Groot & Steg, 2009) we also explored if these variables evolved differently in time. In particular, we explored if awareness of the consequences would increase before feelings of personal obligation.

Taken all together, we expected sociocultural descriptive and subjective descriptive normative beliefs, i.e. beliefs that most others and important others do not smoke in public places, to increase the most (hypothesis 1); and we expected to referent injunctive normative beliefs, i.e. beliefs that others with whom one identifies approve of not smoking in public places, to increase the less (hypothesis 2).

Conversely, normative measures towards being silent in the library were not expected to change as a function of time (hypothesis 3). To the best of our knowledge, no social or institutional change in library regulations occurred within this time frame.

Behavior and smoking effects on normative measures. In what concerns behavior, many studies have reported positive correlations between normative measures and behaviors (e.g., Fishbein &Ajzen, 1975; Schwartz, 1977). In particular, empirical support of the positive relation has been provided for the being silent in the library (Aarts & Dijksterhuis, 2003; Stapel, Joly, & Lindenberg, 2010) and smoking behavior in general (Guo, McGee, Reeder, & Gray, 2010; Orbell et al., 2009; Rhodes & Ewoldsen, 2009; Zhang et al., 2010). Therefore, we expected that individuals with higher normative behavior would have higher normative beliefs than individuals with lower normative behavior (hypothesis 4).

Regarding smoking, respondents who were smokers would be losing the possibility of smoking wherever they wanted and would have to confine to smoke designated places, whereas non smokers would merely stop seeing/smelling individuals smoking in public places. Therefore, social norms, both descriptive and injunctive, should have been more salient and activated in smokers than in non smokers. If this advantage of activation leads to an increase or a decrease of normative beliefs on the smokers group, it will depend on a complexity of factors other than the acceptance of the ban. Such factors can be related to addictive behaviors or psychological reactance, for instance, and were not examined in this study. Therefore, we merely expected to find differences in normative measures assessed between smokers and non smokers (hypothesis 5).

Method

Participants

Two-hundred and four students from Lisbon's Classical and Technical Universities responded to the survey. Data of 3 respondents was excluded because it omitted smoking behavior. One-hundred and three respondents were male and 111 were students from Lisbon's Classical University. Age of respondents ranged from to 17 to 57 (M = 23.66, SD = 6.54). Sixty-nine participants responded on Time 1, 67 participants responded on Time 2, and 65 participants responded on Time 3.

To assure that respondents frequented the places where contextual normative clues were expected to be more salient, respondents' frequency of libraries and public places where smoking was banned was initially analyzed. On a 7- point scale ranging from 1 (*never*) to 7 (*very often*), on average respondents reported that over the past two weeks they had sometimes been to the library (M = 3.03, SD = 1.83) and a moderate amount of times to public places where smoking was not allowed (M = 4.76, SD = 1.79). Therefore, it was we considered that respondents would have the opportunity of being exposed to the normative change clues.

Materials and Procedure

Individuals were invited to participate in a survey before lectures. There was evidence that priming normative contents influenced the individual towards more normative cognitions (e.g., Epley & Gilovich, 1999). As such, answering questions relative to being silent in the library first could lead to more normative answers on no smoking in public places questions. Therefore, to minimize possible order effects normative content order was counterbalanced. Individuals were randomly assigned to

respond first either to the silence in the library norm or to the no smoking in public places questionnaire.

The average response time to the questionnaire was 15 minutes. Data was collected one month before the legal change (Time 1), six months after the legal change (Time 2), and one year after the legal change (Time 3). All participants were debriefed and thanked for their participation.

Questionnaire. The questionnaire was composed by several affirmative sentences regarding social norms, attitudes and behavior towards silence in the library and no smoking in public places (see questionnaire in Appendix). Item-construction rationale followed on previous research on social norms and behavioral models (e.g., Cialdini et al., 1990; Fishbein & Ajzen, 1975; Schwartz, 1977; Hogg & Turner, 1987).

Respondents were generally asked to rate the statements on a 7- point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Various types of normative beliefs were measured: (a) sociocultural descriptive, i.e., participants were asked to rate to what extent they agreed that most people were usually silent in the library/did not smoke in public places (3 items); (b) subjective descriptive, i.e., participants were asked to rate to what extent they agreed that important people in their lives were usually silent in the library/did not smoke in public places; (c) referent descriptive, i.e., participants were asked to rate to what extent they agreed that people with whom they identified were usually silent in the library/did not smoke in public places; (d) sociocultural injunctive, i.e., participants were asked to rate to what extent they agreed that most people approved of being silent in the library/not smoking in public places (4 items); (e) subjective injunctive, i.e., participants were asked to rate to what extent they agreed that important people in their lives approved of being silent in the library/not smoking in public places; (f) referent injunctive, i.e.,

participants were asked to rate to what extent they agreed that people with whom they identified approved of being silent in the library/not smoking in public places; and (g) personal normative beliefs, both awareness of consequences, i.e., participants were asked to rate to what extent they agreed being silent in the library/not smoking in public places was a behavior that had consequences to others, and personal obligation, i.e., participants were asked the amount of personal obligation in feelings towards being silent in the library/not smoking in public places on a 7- point scale, ranging from 1 (*no obligation*) to 7 (*extreme obligation*). Participants who were not smokers were asked to respond to the personal norms questions imagining what they would do if they were smokers.

Sociocultural norms questions were moderately to strongly related and were averaged for each norm content on the descriptive ($\alpha_{library} = .79$; $\alpha_{smoking} = .56$) and injunctive features ($\alpha_{library} = .77$; $\alpha_{smoking} = .76$)[2].

Two types of attitudinal measures were collected: (a) an affective-based attitudinal measure, participants were asked how much they personally liked being silent in the library/not smoking in public places; and (b) a cognitive-based attitudinal measure, participants were asked how much they personally agreed with being silent in the library/not smoking in public places.Behavior was measured by asking participants to rate how often they were silent in the library/did not smoke in public places on a 7-point scale ranging from 1 (*never*) to 7 (*very often*). Once more, participants who were not smokers were asked to respond imagining what they would do if they were smokers.

In addition, participants were asked if they were smokers and asked their gender, age, and academic qualifications.

---

[2] Multi-items were used to measure sociocultural normative beliefs considering their general nature.

Results

All statistical tests were bilateral and an alpha level of .050 was used.

Normative content order (silence in the library first or no smoking in public places first) had been counterbalanced. A content order effect was found: no smoking in public places behavior mean was higher when participants answered to the silence in the library questions first (M = 5.44, SD = 1.92) than to the no smoking in public places questions (M = 4.75, SD = 2.32), $t(199) = 2.28$, $p = .024$. We tested if this effect diverged further as a function of time but no interaction effects were found, $F(2, 195) = 1.74$, $p = .179$. This order effect is in line with literature evidencing that activation of norms leads to subsequent normative behavior (e.g., Aarts & Dijksterhuis, 2003; Joly & Stapel, 2008) and can be extended, to some degree, to other normative contents (Cialdini et al. 1990; Harvey & Enzle, 1981).

Gender differences were also analyzed. Tests of mean differences between male (N = 103) and female (N = 98) respondents were conducted for each measure towards silence in the library and no smoking in public place. Table 1 provides measures of central tendency and test statistics for the normative measures that significantly differed as a function of gender.

Table 1

Measures of Central Tendency and Tests as a Function of Gender

	M(SD)		*t*(199)
Measure	Male	Female	
Silence in the library			
Sociocultural descriptive norm	4.54 (1.24)	5.00 (1.24)	-2.64**
Sociocultural injunctive norm	5.76 (0.81)	6.06 (0.72)	-2.72**
Behavior	4.89 (2.22)	5.31 (2.08)	-2.23*

Note. Scales ranged from 1 to 7. Higher numbers indicate more normative responses.

* $p < .050$, ** $p < .010$.

Differences were found only for measures towards silence in the library, two normative measures, sociocultural normative beliefs, and behavior. Female participant's responses means were higher than male participant's responses means. These results are in line with some evidence that women follow more on social norms than men (e.g., Geller, Winett, & Everett, 1982; Valian 1999). No differences were found in measures for no smoking in public places, suggesting differences related to gender may develop latter, not at constructing/changing time.

Time Effects on Normative and Attitudinal Measures

No smoking in public places. Normative beliefs towards no smoking in public places were expected to increase as a function of time. In particular, we expected to find a larger effect on the sociocultural and subjective than on the referent normative beliefs (hypothesis 1); and we expected to find a larger effect on the descriptive than on the injunctive normative beliefs (hypothesis 2). Table 2 provides the results of analyses of variance (ANOVAs).

Hypothesis 1 was not refuted. The largest effects of the smoking ban were found for the sociocultural descriptive (η_p^2 =.161, a medium effect size) and for the subjective descriptive normative beliefs (η_p^2 =.081, a medium effect size). Pairwise comparisons evidenced that the sociocultural descriptive normative belief mean increased between Time 1 and Times 2 and 3, and that the subjective descriptive normative belief mean increased between Time 1 and Time 3. A small effect of time also emerged in the sociocultural injunctive normative belief (η_p^2 =.068). Pairwise comparisons illustrated that sociocultural injunctive normative belief means increased between Time 1 and Times 2 and 3. As to the referent descriptive and the subjective injunctive normative beliefs, although significant increases as a function of time were observed, the size of the effects was null, $\eta_p^2 < .050$, and, therefore, increases were not considered relevant.

Hypothesis 2 was partially refuted because one of the lowest effect values that emerged was indeed referent to the referent injunctive believe (η_p^2 =.008) but the difference was not significant.

Personal normative beliefs were already high before the smoking ban was implemented and did not change in time, neither did awareness of consequences nor moral obligation. Attitudinal measures results were similar.

Table 2

Measures of Central Tendency and Tests for No Smoking in Public Places as a Function of Time

Measure	*M (SD)*			$F(2,198)$	η_p^2
	1	2	3		
Sociocultural descriptive norm	3.06 (1.05)	3.94 (1.23)	4.27 (1.25)	18.93***	.161
Subjective descriptive norm	4.68 (1.79)	5.78 (1.41)	5.45 (1.48)	8.71***	.081
Referent descriptive norm	4.84 (1.69)	5.46 (1.43)	5.58 (1.45)	4.63**	.045
Sociocultural injunctive norm	4.26 (1.04)	4.83 (1.14)	4.93 (1.18)	7.18**	.068
Subjective injunctive norm	5.25 (1.54)	5.94 (1.22)	5.69 (1.47)	4.19*	.041
Referent injunctive norm	5.57 (1.32)	5.82 (1.31)	5.57 (1.41)	0.79	.008
Personal norm (consequences)	6.64 (0.78)	6.55 (0.76)	6.55 (1.01)	0.21	.002
Personal norm (moral obligation)	5.54 (1.36)	5.70 (1.48)	5.68 (1.55)	0.25	.003
Affect-based attitude	6.17 (1.55)	6.31 (1.53)	6.34 (1.23)	0.25	.003
Cognition-based attitude	6.28 (1.51)	6.48 (1.28)	6.57 (0.92)	0.95	.009

Note. Scales ranged from 1 to 7. Higher numbers indicate more agreement towards the scales' content.

* $p < .050$, ** $p < .010$, *** $p < .001$.

Silence in the library. Normative measures towards being silent in the library were not expected to differ as a function of time (hypothesis 3). Table 3 provides ANOVA's results on respondent's normative and attitudinal measures.

Hypothesis 3 was not refuted. Normative measures means, as well as attitudinal and behavior means, did not significantly diverge as a function of time. As expected for a non-controversial content, most measure means were high and none was below the average point of the scale.

Table 3

Measures of Central Tendency and Tests for Silence in the Library as Function of Time

Measure	*M (SD)*			$F(2,198)$	η_p^2
	1	2	3		
Sociocultural descriptive norm	5.02 (1.24)	4.75 (1.34)	4.50 (1.14)	2.98	.029
Subjective descriptive norm	5.49 (0.99)	5.69 (1.09)	5.51 (1.13)	0.68	.007
Referent descriptive norm	5.45 (1.16)	5.60 (0.98)	5.38 (1.19)	0.63	.006
Sociocultural injunctive norm	6.01 (0.71)	5.93 (0.81)	5.76 (0.80)	1.77	.018
Subjective injunctive norm	5.83 (1.01)	5.85 (0.97)	5.68 (1.14)	0.53	.005
Referent injunctive norm	5.86 (1.05)	5.90 (0.87)	5.74 (1.14)	0.42	.004
Personal norm (consequences)	6.22 (1.28)	6.24 (1.22)	6.26 (1.31)	0.02	.000
Personal norm (moral obligation)	5.01 (1.11)	5.15 (1.09)	4.72 (1.48)	2.03	.020
Affect-based attitude	6.23 (0.94)	6.15 (0.94)	5.88 (1.24)	2.08	.021
Cognition-based attitude	6.42 (0.89)	6.40 (0.76)	6.23 (1.11)	0.83	.008

Note. Scales ranged from 1 to 7. Higher numbers indicate more agreement towards the scales' content.

Behavior and Smoking Effects on Normative Measures

Being silent in the library/no smoking in public places behavior. Participants were divided into the following behavior groups using a median split of the sample: (1) low, those who had responded below the median to the behavior question ($N_{library}$ = 110, $N_{smoking}$ = 107); (2) high, those who had responded above the median to the behavior question ($N_{library}$ = 91, $N_{smoking}$ = 94). We expected that participant's responses means were higher in the high behavior group than in the low behavior group (hypothesis 4). Tests for mean differences between behavior groups were conducted for each normative measure towards silence in the library and no smoking in public places. Table 4 provides measures of central tendency and test statistics for the normative measures that have differed as a function of behavior.

Hypothesis 4 was not refuted. Most normative measures means were higher on the high behavior group than on the low behavior group. On the measures regarding being silent in the library, the larger difference emerged in the referent descriptive normative beliefs and in the sociocultural injunctive normative belief. In measures regarding no smoking in public places, the largest divergences emerged in the personal (moral obligation) and in the subjective descriptive normative belief.

Table 4

Measures of Central Tendency and Tests as a Function of Behavior

	M(SD)		*t*(199)
Normative measure	Low	High	
Silence in the library			
Sociocultural descriptive norm	4.58 (1.15)	4.99 (1.35)	-2.31*
Subjective descriptive norm	5.25 (0.93)	5.95 (1.11)	-4.86***
Referent descriptive norm	5.05 (1.04)	6.00 (0.97)	-6.67***
Sociocultural injunctive norm	5.64 (0.74)	6.22 (0.71)	-5.64***
Subjective injunctive norm	5.52 (0.95)	6.11 (1.07)	-4.16***
Referent injunctive norm	5.53 (1.04)	6.20 (0.87)	-4.90***
Personal norm (moral obligation)	4.64 (1.18)	5.36 (1.22)	-4.29***
No smoking in public places			
Sociocultural descriptive norm	3.52 (1.20)	4.01 (1.32)	-2.76**
Subjective descriptive norm	4.81 (1.72)	5.84 (1.34)	-4.68***
Referent descriptive norm	5.00 (1.63)	5.62 (1.40)	-2.86**
Subjective injunctive norm	5.31 (1.53)	5.98 (1.24)	-3.38**
Referent injunctive norm	5.38 (1.38)	5.96 (1.24)	-3.08**
Personal norm (moral obligation)	5.17 (1.44)	6.17 (1.28)	-5.17***

Note. Scales ranged from 1 to 7. Higher numbers indicate more normative responses.

* $p < .050$, ** $p < .010$, *** $p < .001$.

Smoking. Tests for mean differences between female respondents who were smokers ($N = 37$) and respondents who were not smokers ($N = 164$) were conducted for normative measure towards no smoking in public places. Given the fact that the number of respondents who were smokers was relatively much smaller than the number of respondents who were not smokers, and some of the variable variances between these groups were unequal, we used the unequal variance t-test to perform analysis (see Ruxton, 2006). We expected to find some differences between the responses of smokers and nonsmokers (hypothesis 5). Table 5 provides measures of central tendency and test statistics for the normative measures towards no smoking in public places that differed as a function of smoking.

Hypothesis 5 was not refuted. As expected, differences between smokers and non smokers' normative beliefs means were different. In particular, smokers' normative beliefs means were lower. The larger differences emerged in the personal norm (consequences) and in the subjective descriptive norm.

Table 5

Measures of Central Tendency and Tests as a Function of Smoking

Normative measure towards no smoking in public places	*M(SD)*		*t*(df)
	Smokers	Non smokers	
Subjective descriptive norm	4.46 (1.93)	5.48 (1.50)	-3.03 (46.37)**
Referent descriptive norm	4.68 (1.73)	5.43 (1.48)	-2.44 (48.57)*
Referent injunctive norm	5.16 (1.61)	5.73 (1.38)	-2.10 (48.24)*
Personal norm (consequences)	6.05 (1.25)	6.70 (0.73)	-3.04 (41.70)**
Personal norm (moral obligation)	5.16 (1.54)	5.74 (1.42)	-2.11 (50.81)*

Note. Scales ranged from 1 to 7. Higher numbers indicate more normative responses.

* $p < .050$, ** $p < .010$.

Discussion

Norms and Law

Normative beliefs towards smoking in public places increased after the smoking ban. Despite the fact that the change was legally enforced, it seems to have been socially embraced. Therefore, those segments of everyday life that could not be reached by law enforcement were probably reached by social enforcement, promoting serious gains in public health.

Cialdini and colleagues' focus theory of normative conduct (e.g., 1990) has provided us with crucial guidelines to anticipate and understand normative change. As expected, sociocultural and subjective descriptive normative beliefs, in particular, have increased after the law change. In that novel situation individuals seem to have followed on others, most others and important others in particular, to know what the most effective and accurate behavior would be. The sociocultural injunctive normative belief, the perceived degree of social approval for no smoking in public places, has also increased. We find it interesting that personal normative beliefs and attitudinal measures towards smoking in public places were stable. These variables means were already high before the law change was implemented and did not diverged significantly between times.

Can we relate the legal change to the social norm change? With the implementation of the ban on smoking an increase in social norms towards smoking in public places has co-occurred. Our methodology does not allow for clear statements concerning causal effects or relations between this legal change and normative measures change. Nevertheless, indirect evidence of the effects of legal change on normative beliefs towards no smoking in public places was provided by the absence of changes in normative beliefs towards being silent in the library emerging during the same period.

Therefore, we argue that a change in social norms has probably occurred as an effect of the smoking ban.

Behavior and Smoking Effects on Normative Measures

Results have also illustrated how the several normative measures we took into account differed as a function of behavior and smoking. Not all normative measures differed as a function of a determinate factor but the differences found were consistent, i.e., were in the same direction. Moreover, results emerged disregarding the time of data collection, not only for a well-established content but also for a changing content.

In what concerns behavior, most normative beliefs were significantly higher for individuals who have reported behavior above than below the median, both for being silent in the library and for no smoking in public places. These results are in line with most behavioral models and previous studies. The meaning of these relations for no smoking in public places content is questionable. Results refer to the entire sample. Only 18% of the respondents were smokers and, because of a probably inadequate statistical power, analysis was not conducted for such a small sample. This means that the most part of the answers were simulated smoking behavior in public places given by non smokers. Smoking is a controversial and addictive behavior and therefore we cannot be sure of the meaning of these results.

Comparison between smokers and non smokers' normative measures has evidenced that non smokers have agreed less with normative measures towards no smoking in public places. Hence, it appears that a possible advantage of normative activation in smokers might relate to a decrease in normative measures agreement. We find relevant those differences referred to social normative beliefs with relatively proximal agents of influence (subjective, referent and personal norms), that are actually

the sources of influence theoretically expected to have the influence in behavior (independently of individuals' perceptions of influence sources). Optimistically, we would expect that, if these differences were to occur, they would occur in the opposite direction. Smokers do not seem to have embraced social change as willingly as non smokers did. Additional studies will be necessary to understand the relations between the focus theory of normative conduct and smoking-related behavior.

Concluding remarks

This study was a natural experiment sought to link forces in two different levels of analysis, a legal level and a psychosocial level. Even if control over "manipulation" was naturally impaired, we were able to illustrate how a legal imposition differently increased normative beliefs.

Law changes do not necessarily lead to social changes. Any law implicates psychosocial processes that potentiate its acceptance or refusal. The type of behavior itself might have contributed to this situation. Smoking signs and immediate consequences are rather perceptible. Individuals, smokers or not, can see the smoke, smell its strong scent, feel their eyes watering, nose running or throat irritated. Going back to the previously given example of regulation on the legal limit of driver's blood alcohol, alcohol drinking, *per se*, is often associated with celebrations and it is probably socially approved. It is also far less simple to perceive a correspondence between consuming particular amounts of alcohol, having blood alcohol concentrations of 0.5 mg/ml or 0.2 mg/ml, and increasing the probability of road accidents. For future studies, we believe it would be worth systemizing which factors, particularly which psychosocial factors, make the difference between socially unsuccessful laws and socially successful laws.

References

Aarts, H., & Dijksterhuis, A. (2003). The silence of the library: Environment, situational norm, and social behavior. *Journal of Personality and Social Psychology, 84*, 18–28.

Al-Delaimy, W. K., Pierce, J. P., Messer, K., White, M. M., Trinidad, D. R., & Gilpin, E. (2007). The California Tobacco Control Program's effect on adult smokers: 2. Daily cigarette consumption levels. *Tobacco Control*, *16*, 91–95.

Asch, S. E. (1955). Opinions and social pressure. *Scientific American*,*193*, 31-35.

Borsari, B., & Carey, K. B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies on Alcohol, 64,* 331–341.

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research.* Chicago: Rand McNally.

Christensen, L. B. (1997). *Experimental methodology*. (7th ed.). London: Allyn & Bacon.

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. In S. T. Fiske, D. L. Schacter, & C. Zahn-Waxler (Eds.), *Annual review of psychology* (Vol. 55, pp. 591–621). Palo Alto, CA: Annual Reviews.

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 201–234). New York: Academic Press.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58,* 1015–1026.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity, and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 151–192). New York, NY: McGraw-Hill.

David, B., & Turner, J. C. (2001). Majority and minority influence: A single process selfcategorization analysis. In C. K. W. De Dreu & N. K. De Vries (Eds.), *Group consensus and minority influence: Implications for innovation* (pp. 91-121). Oxford, UK: Blackwell.

De Groot, J., & Steg, L. (2009). Morality and prosocial behavior: The role of awareness, responsibility, and norms in the norm-activation model. *Journal of Social Psychology, 149,* 425–449.

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influence upon individual judgment. *Journal of Abnormal and Social Psychology*, *51*, 629–63.

Durlauf, S. N., & Blume, L. E. (2008). *New Palgrave Dictionary of Economics* (2nd ed.). London: Macmillan.

Ellickson, R. C. (1991). *Order without law: How neighbors settle disputes*. Cambridge MA: Harvard University Press.

Epley, N., & Gilovich, T. (1999). Just going along: Nonconscious priming and conformity to social pressure. *Journal of Experimental Social Psychology, 35,*578–589.

Festinger, L. & Katz, D. (1966). *Research methods in the behavioral sciences.* New York: Holt Rinehart and Winston.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Geller, E. S., Winett, S., & Everett, R B. (1982). *Preserving the environment.* New York: Pergamon Press.

Giannini, D. D., Leone, A. A., Di Bisceglie, D. D., Nuti, M. M., Strata, G. G., Buttitta, F. F., et al. (2007). The effects of acute passive smoke exposure on endothelium-dependent brachial artery dilation in healthy individuals. *Angiology*, *58*, 211-217.

Guo, H., McGee, R., Reeder, T., & Gray, A. (2010). Smoking behaviours and contextual influences on adolescent nicotine dependence. *Australian & New Zealand Journal of Public Health*, 34(5), 502-507.

Harvey, M. D., & Enzle, M. E. (1981). A cognitive model of social norms for understanding the transgression-helping effect. *Journal of Personality and Social Psychology*, *41*, 866 – 875.

Hogg, M. A., & Turner, J. C. (1987). Social identity and conformity: A theory of referent informational influence. In W. Doise & S. Moscovici (Eds.), *Current issues in European social psychology* (Vol. 2, pp. 139 – 182). New York: Cambridge University Press.

Jacobson, R. P., Mortensen, C. R., & Cialdini, R. B. (2011). Bodies obliged and unbound: Differentiated response tendencies for injunctive and descriptive social norms. *Journal of Personality and Social Psychology*, *100*, 433–448.

Joly, J. E, & Stapel, D. A. (2008). Staff, miter, book, share: How attributes of Saint Nicholas induce normative behavior. *European Journal of Social Psychology, 34*, 1047–1056.

Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin*, *26*, 1002–1012.

Larimer, M. E., & Neighbors, C. (2003). Normative misperception and the impact of descriptive and injunctive norms on student gambling. *Psychology of Addictive Behaviors, 17,* 235–243.

Messer, K., Pierce, J. P., Zhu, S. H., Hartman, A. M., Al-Dealaimy, W. K., Trinidad, D. R., et al. (2007). The California Tobacco Control Program's effect on adult smokers: 1. Smoking cessation. *Tobacco Control*, *16*, 85–90.

Miller, D. T., & Prentice, D. A. (1996). The construction of social norms and standards. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 799–829). London: Gilford.

Milgram, S. (1963). Behavioural study of obedience. *Journal of Abnormal and Social Psychology*, *67*, 371–78.

Orbell, S., Lidierth, P., Henderson, C.J., Geeraert, N., Uller, C.,Uskul, A. K., & Kyriakaki, M. (2009). Social–cognitive beliefs, alcohol, and tobacco use: A prospective community study of change following a ban on smoking in public places. *Health Psychology*, *28*, 753–761.

Paicheler, G. (1976). Norms and attitude change: I. Polarization and styles of behavior. *European Journal of Social Psychology*, *6*, 405–427.

Paicheler, G. (1977). Polarization of attitudes in homogeneous and heterogeneous groups. *European Journal of Social Psychology*, *9*, 85–96.

Pepitone, A. (1976). Toward a normative and comparative biocultural social psychology. *Journal of Personality and Social Psychology*, 34, 641-653.

Posner, E. (2000). *Law and social norms*. Cambridge MA: Harvard University Press.

Reno, R. R., Cialdini, R. B., & Kallgren, C. A. (1993). The transsituational influence of social norms. *Journal of Personality and Social Psychology*, *64*, 104–112.

Rhodes, N., & Ewoldsen, D. R. (2009). Attitude and norm accessibility and cigarette smoking. *Journal of Applied Social Psychology, 39*, 2355–2372.

Rivis, A., & Sheeran, P. (2003). Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current Psychology: Developmental, Learning, Personality, Social, 22,* 218–233.

Ruxton, G. D. (2006). The unequal variance t-test is an underused alternative to Student's t-test and the Mann–Whitney U test. *Behavioral Ecology*, *17*, 688-690.

Sherif, M. (1936). *The psychology of social norms*. New York: Harper.

Schultz, P. W. (1999). Changing behavior with normative feedback interventions: A field experiment on curbside recycling. *Basic and Applied Social Psychology, 21,* 25–36.

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius,V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science, 18,* 429–434.

Schwartz, S. H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 221–279). San Diego, CA: Academic Press.

Stapel, D. A., Joly, J. E, & Lindenberg, S. M. (2010). Being there with others: How people make environments norm-relevant. *British Journal of Social Psychology, 49*, 175–187

Sunstein, C. R. (1997). *Free markets and social justice*. New York: Oxford University Press.

Valian, V. (1999). *Why so slow? The advancement of women*. Massachusetts: MIT Press.

Zador, P. L., Krawchuk, S. A., & Voas R. B. (2001). *Relative risk of fatal crash involvement by BAC, age and gender.* Washington, DC: National Highway Traffic Safety Administration.

Zhang, X., Cowling, D.W., & Tang, H. (2010). The impact of social norm change strategies on smokers' quitting behaviours. *Tobacco Control: An International Journal*, *19*, 151-155.

APPENDIX

A utilização dos espaços públicos é um aspecto central para a qualidade de vida, afectando o quotidiano das pessoas. Com o presente questionário pretendemos estudar comportamentos específicos que ocorrem nestes espaços. Pedimos que colabore fornecendo-nos as suas opiniões e experiências relativamente a esses comportamentos.

Este estudo é anónimo e os dados recolhidos serão apenas submetidos a análises estatísticas, não sendo utilizados para qualquer outro fim.

Muito obrigado pela sua colaboração

Por favor classifique as afirmações das páginas seguintes utilizando as escalas apresentadas para expressar a sua opinião. As escalas variam em 7 pontos de acordo com as características indicadas. Por exemplo, para a escala de "concordância", existe a seguinte correspondência:

1. Discordo totalmente	5. Concordo
2. Discordo bastante	6. Concordo bastante
3. Discordo	7. Concordo totalmente
4. Discordo e concordo	

Assim, caso uma pessoa discorde de determinada afirmação deve colocar uma cruz no espaço correspondente ao valor 3.

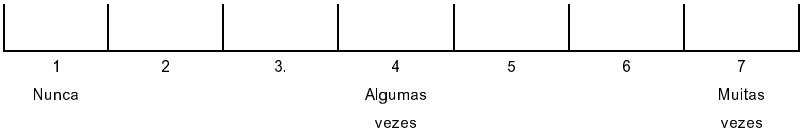
		X				
1 Discordo totalmente	2	3.	4 Discordo e concordo	5	6	7 Concordo totalmente

Relembramos que as afirmações não são verdadeiras nem falsas. Importa-nos a sua opinião relativamente a cada uma delas em particular, sendo importante que as classifique de acordo com a sua experiência pessoal e da forma mais espontânea possível.

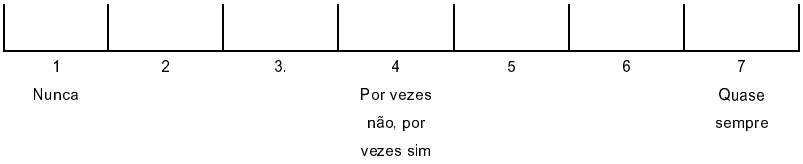
Caso não tenha dúvidas e aceite participar, por favor vire a página e inicie o questionário.

SB) Comportamento: Estar em silêncio na biblioteca.	1. Discordo totalmente	2	3	4. Discordo e concordo	5	6	7. Concordo totalmente
14. Na nossa sociedade, geralmente as pessoas estão em silêncio na biblioteca.							
15. Estar em silêncio na biblioteca é um comportamento aprovado na nossa sociedade.							
16. Estar em silêncio na biblioteca é um comportamento pouco habitual na nossa sociedade.							
17. Estar em silêncio na biblioteca é um comportamento desejável na nossa sociedade.							
18. A maioria das pessoas está em silêncio na biblioteca.							
19. A maioria das pessoas aprova que se esteja em silêncio na biblioteca.							
20. Para a maioria das pessoas é desejável que se esteja em silêncio na biblioteca.							
21. As pessoas com as quais eu me identifico consideram que na biblioteca é apropriado estar em silêncio.							
22. As pessoas com as quais eu me identifico estão em silêncio na biblioteca.							
23. As pessoas que são importantes na minha vida aprovam que se esteja em silêncio na biblioteca.							
24. As pessoas que são importantes na minha vida estão em silêncio na biblioteca.							
25. Estar em silêncio na biblioteca é um comportamento que tem consequências para as outras pessoas presentes na biblioteca.							
26. As bibliotecas são locais silenciosos.							

a) Nas duas últimas semanas, com que frequência esteve numa biblioteca?

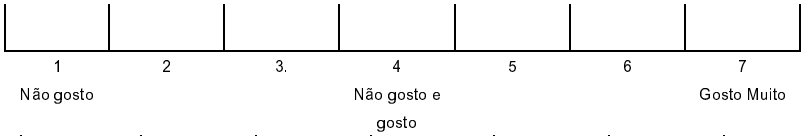


b) Por favor, utilize a escala para classificar esta afirmação: "Quando eu estou na biblioteca estou em silêncio."

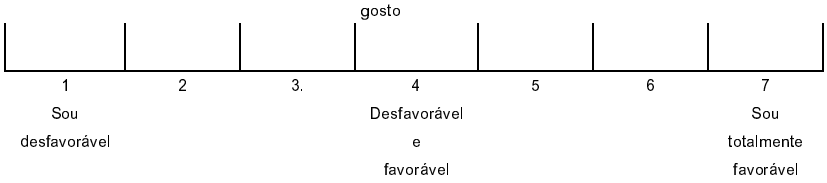


c) Pessoalmente, o que considera acerca do comportamento "estar em silêncio na biblioteca"?

c.1) Gostar



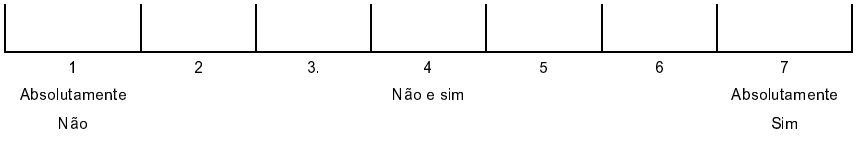
c.2) Estar a favor



e) Imagine que está numa biblioteca e encontra pessoas com quem tem muita vontade de falar.

e.1) Quanta obrigação pessoal ou moral sentiria para não o fazer?

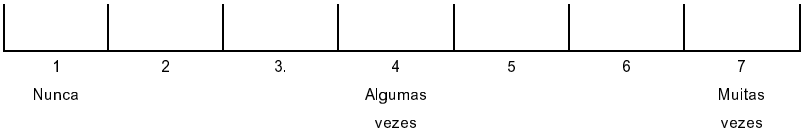
e.2) Poderia não o fazer antecipando que as outras pessoas lhe iriam pedir para estar em silêncio na biblioteca?



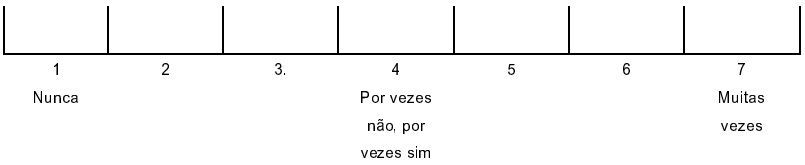
Vire a página por favor

FP) **Comportamento: <u>Não fumar em locais públicos</u>.**	1. Discordo totalmente	2	3	4. Discordo e concordo	5	6	7. Concordo totalmente
1. Na nossa sociedade, geralmente as pessoas não fumam em locais públicos.							
2. Não fumar em locais públicos é um comportamento aprovado na nossa sociedade.							
3. Não fumar em locais públicos é um comportamento pouco habitual na nossa sociedade.							
4. Não fumar em locais públicos é um comportamento desejável na nossa sociedade.							
5. A maioria das pessoas não fuma em locais públicos.							
6. A maioria das pessoas aprova que não se fume em locais públicos.							
7. Para a maioria das pessoas é desejável que não se fume em locais públicos.							
8. As pessoas com as quais eu me identifico consideram apropriado que não se fume em locais públicos.							
9. As pessoas com as quais eu me identifico não fumam em locais públicos.							
10. As pessoas que são importantes na minha vida aprovam que não se fume em locais públicos.							
11. As pessoas que são importantes na minha vida não fumam em locais públicos.							
12. Fumar em locais públicos é um comportamento que tem consequências para as outras pessoas presentes nesses locais.							
13. Os locais públicos são locais “não-fumadores”.							

a) Nas duas últimas semanas, com que frequência esteve em locais públicos onde não se pode fumar?

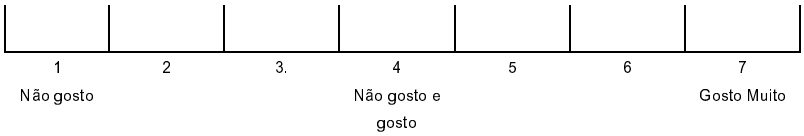


b) Por favor, utilize a escala para classificar esta afirmação: "Quando eu estou em locais públicos não fumo." (*caso não seja fumador responda imaginando o que faria se o fosse*)

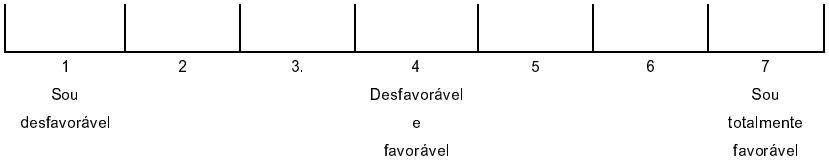


c) Pessoalmente, o que considera acerca do comportamento " não fumar em locais públicos"?

c.1) Gostar



c.2) Estar a favor



e) Imagine que tem vontade de fumar num local público.

(*caso não seja fumador responda imaginando o que faria se o fosse*)

e.1) Quanta obrigação pessoal ou moral sentiria para não o fazer?

e.2) Poderia não o fazer antecipando que as outras pessoas lhe iriam pedir para não fumar?

f) É fumador?

Sim ☐ **Não** ☐

Vire a página por favor

Dados Sócio-demográficos

Sexo: _____	Idade: ___	Curso: _____

O questionário terminou, agradecemos a sua colaboração.

Study 3

Normative Knowledge Accessibility and Judged Usability[1]

Sílvia Luís and José Palma-Oliveira

Lisbon University

[1] Manuscript submitted for publication in *Social Cognition.*

Abstract

Based on the idea that normative knowledge is mentally represented as associations between beliefs and other individuals, normative knowledge towards personality traits activation and use in judgments was explored. The seminal experiment of E. T. Higgins, W. S. Rholes and C. R. Jones (1977) on the role of priming in impression formation was adapted to test for this. Results evidenced that: (a) individuals used recently primed applicable traits in judgments with normative judged usability; (b) normative judged usability tasks were less vulnerable to priming-awareness effects than ambiguous judged usability tasks; (c) differences in normative knowledge chronic accessibility were related to its use but only in judgments with normative judged usability; (d) trait priming and normative knowledge chronic accessibility had similar effects in judgments; and (e) judged usability influenced desirability ratings of a target person. The need to further unravel the relations between judged usability, priming and chronic accessibility is discussed.

Keywords: Normative knowledge; accessibility; judged usability; impression formation.

Normative Knowledge Accessibility and Judged Usability

Individual's judgments and behaviors are influenced by different types of knowledge. The influence of normative knowledge, knowledge regarding others' beliefs and behaviors, is a classical example (e.g., Asch, 1955; Sheriff, 1936). The question of how normative knowledge becomes active to influence cognitions and behavior has recently regained attention.

Social norms are complex knowledge structures that contain information concerning behaviors, evaluations, or beliefs of other individuals. Social norms are capable of becoming activated on the mere presence of environmental features that are related to their content. People's behavior (e.g., Cialdini, Reno, & Kallgren, 1990), or people's mere presence (e.g., Baldwin, Carrel, & Lopez; 1990; Stapel, Joly, & Lindenberg, 2010), specific environments (e.g., Aarts & Dijksterhuis, 2003), norm-related symbols (Joly & Stapel, 2008) and norm-related words (e.g. Epley & Gilovich, 1999) were found to activate social norms. This activation, in turn, has proven to influence cognitions (e.g., Baldwin, et al., 1990; Epley & Gilovich, 1999; Harvey & Enzle, 1981; Stapel, et al., 2010), goals (e.g., Fitzsimons & Bargh, 2003; Shah, 2003), and behaviors (e.g., Aarts & Dijksterhuis, 2003; Cialdini, et al., 1990; Hertel & Kerr, 2001; Joly & Stapel, 2008). Nonetheless, as far as we know, neither the effects of priming in judgments with normative judged usability, nor the effects of normative knowledge chronic accessibility in judgments, have been investigated. Our research intended to explore this by adapting Higgins, Rholes, and Jones (1977) classic study on category accessibility and impression formation, and Fazio and Williams (1986) procedure to measure chronic accessibility of normative knowledge regarding other's evaluations of personality traits.

Knowledge Activation and Use

One of the most systematic and inclusive conceptual framework to explain how knowledge is activated and used was proposed by Higgins (1996). We followed on this framework to expose two concepts that were of decisive importance to our study: accessibility and judged usability. Our study main goal was to replicate trait knowledge activation and use in impression formation to normative knowledge. Therefore, literature review will be focused on classic early studies. For further theoretical differentiation and elaboration see DeCoster and Claypool (2004) and Eitam and Higgins (in press).

Accessibility

Accessibility has been defined as the activation potential of knowledge that is available in memory (Higgins, 1996). It has been mostly studied by analyzing accessibility effects from priming procedures and individual differences in chronic accessibility of mental representations.

Accessibility effects from priming. The accessibility of stored knowledge has been shown to increase when it is recently activated through priming procedures. In a groundbreaking priming study, Higgins, Rholes, and Jones (1977) evidenced how recent events can influence the individual's interpretations of ambiguous behaviors in a passive and unintended way. In particular, these researchers have asked participants to characterize the ambiguous behavior of a target person who could be characterized with antonymous trait pairs, equally applicable to the ambiguous behavior (e.g., "persistent" or "stubborn", see Higgins & Brendl, 1995). Findings revealed that participants were more likely to use trait-related constructs that had been previously primed in an

apparently independent task of the study to characterize the target person's ambiguous behaviors. This is an effect known as assimilation effect.

However, individual´s responses were not always congruent with the valence of the activated knowledge. Priming procedures have also been related to contrast effects. Awareness of priming events' potential influence is one of the conditions that might lead to a contrast effect. Supraliminal priming procedures, as the procedure used in the Higgins et al. (1977) study, implied an activation of the mental representation of interest in a first task in such a way that participants were aware of the occurrence of the priming event. However, participants did not realize the relations between that activation event and the later influence or use of that representation in an unrelated context. A considerable body of research has demonstrated that when participants realize such relations, contrast effects are likely to occur (see Martin, 1986). Priming events' recall levels were found to be related to assimilation and contrast effects (Lombardi, Higgins, & Bargh, 1987). A strong assimilation effect of recent priming on categorization was found among participants who did not recall any of the priming effects and, conversely, a strong contrast effect has been found among participants who recall priming events. Consciousness of the priming events seemed to enable participants to process subsequent information relevant to the primed constructs more flexibly, and evaluate if the priming event was biasing their responses. Of importance, awareness has not inevitably produced contrast effects. The emergence of contrast and assimilation effects seems to be influenced by several joint operating variables and combines automatic and controlled processes' effects. For example, there was evidence that when capacity and motivation were reduced, assimilation effects occurred even when individuals were aware of the priming event (see Martin, Seta, & Crelia, 1990; Lombardi et al., 1987). Judged usability is another variable which has influenced how

increased accessibility from recent priming relates to subsequent stimulus judgments. I will discuss it in a section further ahead.

Chronic accessibility effects. Individual differences in chronic accessibility have been shown to influence impressions and memory of the ambiguous behaviors of target people (Higgins, King & Mavin, 1982). Researchers have explored the accessibility of different knowledge structures (see Higgins, 1996). For conceptual relatedness, we have aimed to integrate Fazio and colleagues' research on attitude accessibility (e.g., Fazio, 1986; Fazio, 1995; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Powell & Fazio, 1984).Within this framework, attitudes are represented by specific associations between a particular attitude object and its evaluation which vary in accessibility. Attitude accessibility has been measured via response time to the attitudinal inquiry. This assumes that the latency measure reflects the strength of the association between object and evaluation, which is the determinant factor of the chronic accessibility. Findings have evidenced that the latency with which one responds to an attitudinal inquiry is sensitive to the object-evaluation association strength. Thus, it provides an indication on the likelihood that the attitude will be activated spontaneously upon one's encountering the object (see Fazio et al., 1986). These attitudinal features are functional because higher accessibility makes it easier to activate stored knowledge. And one would want stored knowledge related to a recent or frequent event in one's environment to be easily activated again, given its recentness or frequency makes it more likely that it will reappear (see Fazio, 1986).

Likewise, it would also be functional for normative knowledge, i.e., associations between beliefs or behaviors and other individuals, to be accessible and easily activated. One would want stored knowledge related to actions recently and frequently done and valued by specific others to be easily activated and, indeed, there is some evidence that

chronic accessibility of social norms, measured by response time, can predict behavior (Rhodes & Ewoldsen, 2009). Nonetheless, influence of normative knowledge chronic accessibility in judgments under uncertainty has been underinvestigated.

Priming and chronic accessibility effects. The effect of an accessible construct in stimulus judgment, at the time of judgment, has depended solely on its accessibility. Even if increased accessibility can have contextual or internal origins, the specificity of the source did not seem to be relevant in order to produce its effects (see Bargh, Bond, Lombardi, & Tota, 1986). Both greater temporary accessibility, as a function of priming, and greater chronic accessibility, as an individual difference, have predicted stronger responses to stimulus information in terms of the accessible construct.

Judged Usability

Judged usability of knowledge, such as perception of relevance and appropriateness, involves a controlled process in which people judge whether activated knowledge should be used in responding to a stimulus (Higgins, 1996). Most research on the use of information in judgments under uncertainty has examined the lack of use of statistical information. There is evidence that judged usability of such information was influenced by a number of factors (see Nisbett, Krantz, Jepson, & Kunda, 2002), including perceived causal significance (e.g. Ajzen, 1977), framing of the task or problem (e.g. Trope & Ginossar, 1988), and perceived representativeness (e.g. Zukier & Pepitone, 1984). In general, results suggested that individuals used statistical information when its judged usability was made apparent (see Kruglanski, Friedland, & Farkash, 1984).

Researchers have also examined the role of conversational norms in activated information's judged usability (e.g., Strack, Martin, & Schwarz, 1988). Although

experimental situations are rather artificial, there has been evidence that individuals follow the same principles that govern natural conversations (see Schwarz, 1994). In particular, research participants were likely to perceive the research situation as a task-oriented setting and attempt to exchange information as accurately as possible, assuming that the information provided was informative, truthful and clear. As in natural contexts, participants expected the experimental context to provide clues to clarify an ambiguous situation and to determine what was irrelevant or redundant. Strack et al. (1988) demonstrated that when a specific and a general question about life satisfaction were placed in the same conversational context by a joint lead-in, the information on which the answer to the specific question was based on was disregarded when answering the general question. Even if answering the specific question had increased the accessibility of the information relevant to that question, the assimilation effect was attenuated due to the conversational norm of nonredundancy. Therefore, conversational context may change the perceived nature of the judgmental task and lead participants to inhibit accessible information.

The Present Research

In Higgins et al. (1977) study, participants were asked how one might characterize a target person, and how desirable they considered the target to be, after being provided behavioral ambiguous descriptions of this target. In our research, we added a normative judged usability condition: some participants were asked how most people might characterize the target's behaviors, and how desirable most people would consider the target to be. This condition allowed for exploring if and how normative knowledge towards personality traits was activated and used in judgments under uncertainty. Considering that individuals used statistical knowledge when it's judged

usability was made apparent, we argued that individuals were also likely to use normative knowledge when it's judged usability was made apparent. Moreover, unlike statistical knowledge (see Nisbett et al., 2002), normative knowledge is widely used in everyday life (e.g., Aarts & Dijksterhuis, 2003; Cialdini, et al., 1990; Joly & Stapel, 2008; Sherif, 1936).

A behavioral description is ambiguous when there are at least two alternative constructs that are equally applicable to it, such as a positive trait like "adventurous" and a negative trait like "reckless" (Higgins & Brendl, 1995). Before conducting the experiment, we had first conducted a pilot study to test if the behavioral descriptions used by Higgins et al. (1977) were also ambiguous for our sample. In addition, we also tested to see if the positive and negative traits were equally applicable in Higgins et al.'s (1977) original condition, which we have designated as ambiguous judged usability condition, and in our new condition, which we have designated as normative judged usability condition.

Our research main expectations were that (a) normative knowledge was activated and used when its' judged usability was made apparent, (b) normative knowledge was vulnerable to priming manipulations, and (c) normative knowledge chronic accessibility influenced normative knowledge activation and use. In particular, we expected to find assimilation effects of trait priming on target characterizations in both judged usability conditions (hypothesis 1); chronic accessibility effects of normative knowledge in characterizations of the target person's ambiguous behaviors in the normative judged usability condition (hypothesis 2); independent effects of trait priming and normative knowledge chronic accessibility in characterizations of the target person's ambiguous behaviors in the normative judged usability condition (hypothesis

3). We also expected to find assimilation effects of priming in the desirability ratings of the target person, in both judged usability conditions (hypothesis 4).

In addition, we have explored if (d) normative knowledge would be activated and used in the ambiguous judged usability condition, considering that normative knowledge could have some applicability to the target person's ambiguous behavior and also become activated when the task had no explicit normative judged usability; and if (e) judged usability conditions would influence desirability ratings of the target person, acknowledging that judged usability may influence individual's reliance on conversational norms.

Pilot Study

Method

Forty-three students (3 males), enrolled in introductory psychology courses at Lisbon University, were presented with four ambiguous descriptions of an individual and asked to characterize the text's character relevant personality traits using a single word. The information presented was translated and adapted into Portuguese from Higgins et al. (1977). It allowed for the target person to be either characterized as adventurous or reckless, self-confident or conceited, independent or aloof, and persistent or stubborn, in both judged usability conditions (see the original text and the translated version in Appendix A). Participants were asked to characterize each one of the four descriptions of the target. They were randomly assigned either the normative or the ambiguous judged usability questionnaires. On the normative judged usability condition, for each description, participants were asked how most people might characterize, in a single word, a certain aspect of his personality. On the ambiguous judged usability condition, participants were asked, for each description, how one might characterize, in a single word, this same aspect of his personality. We expected that the judged usability manipulation would not, by itself, influence participants' characterizations.

Results and Discussion

The descriptions of the individuals should have been conflicting enough to elicit both the positive and the negative traits. When responding to the questionnaire, naturally, and as reported by Higgins et al. (1977), participants used both the personality

traits we were focusing on and denotative or evaluative synonyms. Table 1 presents the percentage of positive traits participants used to characterize the personality aspects.

Table 1

Percentage of Positive Traits Used

	Judged usability condition	
Trait pairs	Normative	Ambiguous
Adventurous/Reckless	71.42 %	77.27 %
Self-confident/Conceited	76.19 %	68.18 %
Independent/Aloof	47.61 %	22.72 %
Persistent/Stubborn	66.67 %	68.18 %

Results evidenced participants using both the positive and the negative traits, which allows for considering the stimulus to be ambiguous. The percentage of participants who used positive traits was beyond 50% in all trait pairs, with the exception of the pair independent/aloof. As we would be comparing the incidence of positive and negative characterizations as a function of other variables, not merely between themselves, we did not expect the greater incidence of positive characterizations would differentially influence our study. Nonetheless, to minimize possible chronic accessibility differences between positive and negative traits, we decided it would be better to only explore the positive traits.

Tests of positive and negative trait frequencies used in the normative and the ambiguous judged usability conditions were also conducted. As expected, the frequency of use of positive and negative traits was independent from the judged usability conditions (all *p*s >.050). Therefore, possible effects found in the experimental study are not expected to be due to a higher applicability of the positive or negative traits than the one in the judged usability conditions.

Experimental Study

Method

Participants. One hundred and forty-four students (14 males), enrolled in introductory psychology courses at Lisbon University, participated in this experiment. All participants received course credit for their participation.

Materials and procedure. Individuals were invited to participate in a two-part study and scheduled in sessions of 1 to 10 students. In the first session of the study, after participants have provided their informed consent, we collected preexperimental measures of chronic accessibility on personality traits normative knowledge. The second session was the experimental session. It occurred approximately one week later, in order to minimize the information activation effects of the first session. Participants were debriefed and thanked.

Preexperimental session. Participants were seated at individual computers in isolated carrel desks and told they would be asked to make judgment on different behaviors. Normative knowledge chronic accessibility was measured using a reaction-time task. Response time is presumed to indicate the strength of the link in memory between a representation of the object and its related knowledge. This task followed on Fazio and Williams's (1986) procedure that simultaneously measures response time and scale agreement in the attitudes domain, allowing controlling for possible normative knowledge extremity effects in response time, as we will analyze further ahead. Participants were instructed to rate their agreement with several statements by pressing one number between 1 and 7 to indicate their agreement with the sentence on the computer screen (1 = *totally disagree* and 7 = *totally agree*). Instructions emphasized that participants were to maximize both their response's speed and accuracy.

A total of 30 statements were randomly presented to participants. Four statements were critical items and corresponded to sentences concerning normative evaluations towards the following personality traits: adventurous, self-confident, independent, and persistent (Table B1 in Appendix B lists critical statements). The other statements were filler items that were either to be used on a consumer psychology study or concerning different personality traits.

Experimental session. The experimental session was adapted from the Higgins et al. (1977) study. Participants were randomly assigned to the cells of an experimental design between subjects with 2 x (Priming: priming vs. no priming) x 2 (Judged usability: normative vs. ambiguous).

Participants in the priming condition were told that the session was composed by two unrelated tasks: a perception task and a reading comprehension task. In the perception task participants were primed with applicable positive personality traits (adventurous, self-confident, independent, and persistent). Participants were shown a series of 10 slides with different colored backgrounds and were told they would have to write the background color as quickly as possible. However, before each slide became colored, a "memory word" would appear on the slide and participants were asked to also write that word immediately after the slides became colored and after they had written the slide color – in the original study the words were presented auditorily and participants were not asked to write but only to name the colors and words. Each memory word was presented for six seconds. This type of priming is conceptual and supraliminal and implies that participants are aware of the stimulus presentation but not of its effects on judgment or behavior (see Bargh & Chartrand, 2000). The 10 memory words included 6 object-nouns and the 4 critical personality traits. These words always appeared in the following order: furniture, corner, adventurous, vacuum cleaner, self-

confident, golf ball, independent, persistent, mountain, telephone. Following this task, participants were given the reading comprehension task. They read a text about a person named Pedro (in the original version he was named Donald) and were asked to familiarize themselves with it because later on they would have to answer some questions about it (see Appendix A). In the text Pedro was ambiguously described. The pilot study evidenced that the information presented was conflicting enough to allow Pedro to be either characterized as adventurous or reckless, self-confident or conceited, independent or aloof, and persistent or stubborn. Participants were given about 3 minutes to read the text. Participants in the no priming condition were only asked to complete the reading comprehension task.

After reading the text, participants were given either the normative or the ambiguous judged usability questionnaires and asked to characterize each of the four ambiguous descriptions of Pedro (see Appendix C). In the normative judged usability condition, participants were asked how most people might characterize a particular aspect of Pedro's personality using a single word. In the ambiguous judged usability condition, we followed on Higgins et al (1977) and asked participants how they might characterize a particular aspect of Pedro's personality using a single word. The characterizations constituted our main dependent measure. Following this task, all participants were asked to answer eight factual questions about the text, to maintain the credibility of the reading comprehension task. They were also asked to rate Pedro's desirability on a scale ranging from -10, *extremely negative*, to 10, *extremely positive*. In the normative judged applicability condition, participants were asked how most people would rate Pedro's desirability; in the ambiguous judged usability, we kept following on Higgins et al. (1977) asking participants how they would rate Pedro's desirability. Desirability ratings in the ambiguous judged usability condition do not actually have

ambiguous judged usability because participants are explicitly asked to provide their own ratings. Therefore, when referring to the desirability rating task, for clarity's sake, the condition name will be changed to ambiguous/personal.

Participants in the priming condition were also asked to recall the memory words that were presented in the perception task.

Results and Discussion

All statistical tests were bilateral and an alpha level of .050 was used.

Priming effects on characterizations. Participants' characterizations were evaluated by three blind and independent judges who assessed if the characterizations were applicable to the ambiguous description, on the one hand, and if the characterizations were positive or negative, on the other hand. The inter-rater agreement was of 88.03% for the characterization applicability, all participants responses were evaluated as applicable, and of 96.10% for the characterization valence.

Participants were divided into 1 of the 3 following characterizers types, depending on how they had characterized the four ambiguous descriptions of Pedro: (1) positive, with a majority of positive characterizations; (2) negative, with a majority of negative characterizations; (3) mixed, with an equal number of positive and negative characterizations. The aggregation of characterizations allowed for the use of frequency tests that required the independence of observations. However, this was a data analysis limitation because the data of those participants who classified as "mixed" lost most of its utility. Mixed characterizers' data interpretation was not clear, and, like in Higgins et al. (1977), it was not included in statistical analyses.

We expected to find an assimilation effect of positive trait priming in both judged usability conditions (hypothesis 1), namely that participants in the priming

condition were more positive than negative characterizers. In accordance with the greater applicability of the positive traits in comparison to negative traits, we further expected more positive characterizers in the priming condition than in the no priming condition, and more negative characterizers in the no priming condition than in the priming condition. Table 2 provides the frequencies of characterizers as a function of priming conditions in judged usability conditions.

Table 2

Frequencies of Characterizers as a Function of Priming Conditions on Judged Usability Conditions

	Normative judged usability		Ambiguous judged usability	
Characterizers	Priming	No priming	Priming	No priming
Positive	26	14	24	23
Negative	0	5	1	3
Mixed	13	14	10	11

In the normative judged usability condition, the assimilation effects of priming were observed, not refuting our hypothesis. The difference between positive and negative characterizers as a function of priming conditions was significant (p = .010; Fisher's exact test).

However, in the ambiguous judged usability condition, our hypothesis was refuted. Unexpectedly, the incidence of positive and negative characterizers did not differ as a function of priming conditions (p = .610; Fisher's exact test).

This study slightly differed from Higgins et al.'s (1977) in the priming procedure. Even though in both studies the priming occurred in an apparently different task of the study, in the original study participants received the priming traits auditorily and had to repeat them immediately after naming the background color. In this study, participants received the priming traits written on the screen and had to write them immediately after writing the background color. Researchers have not found clear or reliable results regarding the effects of different priming modalities. Nonetheless, some findings suggested that different priming modalities might have different effects (e.g., Cleland & Pickering, 2006; Dorjee, Devenney, & Thierry, 2010; Kouider & Dupoux, 2001; Valentine, Hollis, & Moore, 1998). Therefore the possibility that our procedure might have induced a different effect from Higgins et al.'s (1977) seems reasonable. Considering that the proportion of traits that participants recalled was relatively high (M = .42, SD = .24), we suggest that the procedure we used might have led to an increase in participants's awareness of the priming event. Moreover, awareness of the priming event might have induced different uses of the activated knowledge in the different judged usability conditions. In the ambiguous judged usability condition, awareness of priming events at the moment of judgment should have induced an attenuation of assimilation effects or even led to a contrast effect, in line with literature results (e.g., Lombardi, et al., 1987), which would explain the absence of assimilation effects from priming. However, in the normative judged usability condition, awareness of priming events must not have had a similar influence because assimilation effects were indeed found. To test for this *ad hoc* hypothesis, we divided participants into high and low

recall groups [2]and tested to see if the proportion of positive characterizations done by participants was similar. Participants who recalled three or more traits constituted the high recall group (N = 12, 7 participants had been assigned to the normative judged usability condition) and participants who recalled up to one trait constituted the low recall group (N = 29, 11 participants had been assigned to the normative judged usability condition). Because proportion tests were conducted, participants' characterization data were not aggregated; each of the four participants' judgments was analyzed separately.

Proportion tests for positive characterizations in recall groups for the judged usability conditions are presented on Table 3.

Table 3

Proportion of Positive Characterizations in Recall Groups for the Judged Usability Conditions

	Recall Groups		Binomial Test
Judged Usability Conditions	High recall	Low recall	(*p value)*
Normative judged usability	.40	.60	.170
Ambiguous judged usability	.23	.77	<.001

Results confirmed our expectations. In the normative judged usability condition, the proportion of positive traits used by participants in the high and the low recall

[2] A no recall group was not created because only two participants did not recall any trait.

groups was statistically similar, suggesting that a possible awareness of priming effects had no influence. However, in the ambiguous judged usability conditions, the proportion of positive characterizations was statistically higher in the low recall group than in the high recall group, suggesting that a possible awareness of priming effects led to an attenuation of the assimilation effects of priming in the high recall group. We highlight that reasons other than awareness of priming events at the moment of judgment might be related to a higher recall. Nonetheless, results support our interpretation.

Chronic accessibility effects on characterizations. These section's analyses refer to data of participants in the no priming condition, in order to isolate the effects of chronic accessibility, measured using a reaction-time task (N = 70, 33 participants had been assigned to the normative judged usability condition). Reaction-time data was highly skewed. Therefore, it was subjected to a reciprocal transformation (1 divided by the reaction time) to normalize the distribution and multiplied by 1000 to avoid rounding problems associated with small numbers (see Fazio, 1990). This transformation changed response time to a representation of response per unit of time that represents response speed. Unlike response time, response speed's higher numbers represent faster answers. All analyses involving accessibility were conducted using these transformed data.

Previous findings on the existence of a low, nonetheless significant, relation between attitude scale extremity and response speed to an inquiry (e.g., Fazio & Williams, 1986; Powell & Fazio, 1984) suggested the need to control for extremity. Otherwise, high response speed groups could aggregate more extreme evaluations than low response groups, thus confounding the effects of response speed and extremity. To prevent this possible problem we tested to see if there was a relation between response

speed and extremity. Normative knowledge extremity scored as scalar agreement deviation from the neutral point of the scale. Within-participant analyses evidenced that most variables were very weakly related and that no correlation reached statistical significance ($ps > .050$). Therefore participants were simply divided into the following response-speed groups using a median split of the sample: (1) high response speed, those who had responded faster than the median to the majority of normative statements of the positive traits on the preexperimental session were assigned to the high response-speed group; (2) low response speed, those who had responded slower than the median to the majority of normative statements of the positive traits; (3) mixed response speed, those who had an equal number of faster and slower than the median responses to the normative statements of the positive traits. Data of participants classified as mixed response-speed group was not included in statistical analyses.

We expected to find chronic accessibility effects of normative knowledge in the normative judged usability condition (hypothesis 2). In particular, participants who classified as high response-speed group were expected to be more positive than negative characterizers. Controlling for the greater applicability of the positive traits in comparison to the negative traits, we expected a higher incidence of positive characterizers among individuals who classified as high response-speed group than among individuals who classified as low response-speed group. In addition, we expected a higher incidence of negative characterizers among individuals that classified as low response-speed group than among individuals that classified as high response-speed group. Frequencies of characterizers as a function of response-speed groups in judged usability conditions are presented on Table 4.

Table 4

Frequencies of Characterizers as a Function of Response-Speed Groups in Judged Usability Conditions

	Normative judged usability			Ambiguous judged usability		
Characterizer	High RS	Low RS	Mixed RS	High RS	Low RS	Mixed RS
Positive	9	2	3	7	8	8
Negative	0	4	1	1	1	1
Mixed	5	4	5	2	5	4

Note. RS = Response Speed. Data refers to the no priming conditions.

The hypothesis of chronic accessibility effects of normative knowledge in characterizations of the target person's ambiguous behavior in the normative judged usability condition was not refuted. As expected, the incidence of positive and negative characterizers differed as a function of high and low response-speed groups (p = .011; Fisher's exact test).

In the ambiguous judged usability condition, characterizers and response-speed groups were independent (p = 1; Fisher's exact test).

Priming and chronic accessibility effects on normative characterizations. To analyze if positive trait priming and chronic accessibility of positive traits normative knowledge had similar independent effects on normative characterizations (hypothesis 3) we tested to see if characterizations were related to chronic accessibility groups in the priming normative judged usability condition (N = 39). Participants' data was again

divided into high, low, and mixed response-speed groups. We expected to find distributions similar to the no priming normative judged usability condition with one major exception: the incidence of positive characterizers should be similar among the high and the low response-speed groups. Frequencies of characterizers as a function of response-speed groups are presented on Table 5.

Table 5

Frequencies of Characterizers as a Function of Response Speed Groups

Characterization	Response Speed		
	High RS	Low RS	Mixed RS
Positive	9	8	9
Negative	0	0	0
Mixed	5	3	5

Note. RS = Response Speed. Data refers to the priming normative judged usability condition.

Our hypothesis was not refuted. The incidence of positive characterizers was similar among the high and low response-speed groups. Because no participant classified as a negative characterizer in the priming normative judged usability condition, the significance of differences was tested by using a proportion test which, as expected, evidenced no significant differences in the proportion of positive characterizers in both the high and low response-speed groups.

Desirability ratings. We expected to find assimilation effects of positive priming in the overall desirability ratings (hypothesis 4). Mean desirability ratings of Pedro were entered into a 2 x (Priming: priming vs. no priming) x 2 (Judged usability: normative vs. ambiguous/personal) ANOVA. Our hypothesis was refuted: no mean differences were found between priming conditions, $F(1, 140) = 0.53$, $p = .469$.

Additionally, we also explored the influence of judged usability conditions. A judged usability main effect did emerge, $F(1,140) = 4.98$, $p = .027$, $\eta p^2 = .034$, but illustrated lower desirability ratings of Pedro in the normative judged usability condition ($M = 3.51$, $SD = 3.98$) than in the ambiguous/personal judged usability condition ($M = 4.92$, $SD = 3.37$). No interaction between priming and judged usability effects emerged.

General Discussion and Conclusions

This study provided preliminary evidence on normative knowledge activation and use in judgments under uncertainty. Moreover, this study raised some research questions we believe are worth studying in the future.

Regarding trait-priming effects on characterizations, we found evidence of the occurrence of assimilation effects using a normative judged usability condition which, to the best of our knowledge, had not been reported before. Judgments with normative judged usability were vulnerable to contextual influences. In addition, the non replication of assimilation effects of trait priming in the ambiguous judged usability condition led us to examine possible differential effects of awareness of priming events at the moment of judgment. Of most interest to us, *ad hoc* analyses supported the possibility that task judged usability interacted with priming-event awareness to influence how increased accessibility from recent priming influenced subsequent judgments. High awareness of priming was related to an attenuation of priming events

in the ambiguous judged usability condition, in line with literature findings of contrast and assimilation effects regarding priming-event awareness (e.g., Lombardi, et al., 1987), but not in the normative judged usability condition. It would be important to find cumulative evidence of the existence of assimilation effects in tasks with normative judged usability even when participants are aware of priming events and to explore the reason why this happens. For example, (a) could it be because normatively framed judgments lead participants to rely more on conversational norms and infer that the priming events of the prior task were actually informative and were not biasing the normative characterizations of the ambiguous target behaviors or (b) could it be because individuals are less motivated to reduce bias when judgments are normatively framed? Another issue we intended to explore was if assimilation effects of priming also occurred when tasks had normative judged usability. Exploring normative judgments differential vulnerability to contextual influences might improve our understanding of normative knowledge formation and application.

Normative knowledge chronic accessibility influenced individuals' normative judgments of the target-person's ambiguous behaviors, similarly to what has been found on attitudes literature (e.g., Fazio & Williams, 1986). Individuals who had responded relatively faster to normative sentences concerning positive personality traits used more positive than negative traits in normative judgments under uncertainty than individuals who had responded relatively slower. However, judgments with ambiguous judged usability were not influenced by normative knowledge, suggesting that if we want people to judge other's ambiguous behaviors normatively we must explicitly ask them to do so. It would be interesting to explore the conditions under which individuals use normative knowledge when it is not explicitly demanded. For instance, will normative knowledge be used in tasks that do not have explicit normative judged usability when

(a) participants have been exposed to normative priming; or (b) the normative knowledge content has greater social relevance than personality traits?

Trait priming and normative knowledge chronic accessibility contributed similarly to increase the accessibility and likelihood of posterior use of the positive traits, as it was found for the traits knowledge structure (e.g., Bargh et al., 1986). In particular, individuals were likely to judge how most people would characterize behaviors using positive personality traits. This was the case either when a positive trait that was applicable to the behavior had been primed in a previous task, or when individuals had high chronic accessibility to the applicable positive trait normative knowledge. This result is interesting because (a) normative structures are more complex than trait knowledge structures and (b) social norms increased accessibility was chronic, while traits' increased accessibility was due to priming. Nonetheless, normative knowledge chronic accessibility and trait priming seem to have had quite similar effects in knowledge use.

Desirability ratings of the target person were not influenced by priming. We believe that neither an assimilation nor a contrast effect have emerged because we compared a positive prime condition with a no prime condition, and not with a negative prime condition, as it is most commonly done (e.g., Higgins et al., 1977). However, task judged usability did influence desirability ratings. Individuals in the ambiguous/personal judged usability condition rated the target more positively than individuals in the normative judged usability. It would be relevant to find cumulative evidence on how normative desirability ratings do tend to be less positive than ambiguous/personal desirability ratings, and to understand why this might happen. For instance, could it be that normatively-framed judgments lead participants to rely more on the conversational norm of nonredundancy, thus disregarding the information on

which the previous characterizations were based on, when rating the target person's general desirability?

A better understanding of the relations between normative knowledge chronic accessibility, priming, and judged usability could have significant theoretical and practical implications, not only on knowledge structures and social norms research but also on persuasion and behavior change research. For instance, to understand under what conditions merely asking people to act normatively would be sufficient to promote normative-type behavior.

References

Aarts, H., & Dijksterhuis, A. (2003). The silence of the library: Environment, situational norm, and social behavior. *Journal of Personality and Social Psychology, 84*, 18–28.

Ajzen, I. (1977). Intuitive theories of events and the effects of base rate information on prediction. *Journal of Personality and Social Psychology, 35*: 303–314.

Asch, S. E. (1955). Opinions and social pressure. *Scientific American*,*193*, 31-35.

Baldwin, M. W., Carrell, S. E., & Lopez, D. F. (1990). Priming relationship schemas: My adviser and the pope are watching me from the back of my mind. *Journal of Experimental Social Psychology, 26,* 435-454.

Bargh, J. A., Bond, R. N., Lombardi, W. J. & Tota, M. E. (1986). The additive nature of chronic and temporary sources of construct accessibility. *Journal of Personality and Social Psychology, 62,* 893–912.

Bargh, J.A., & Chartrand, T. L. (2000). Studying the mind in the middle: A practical guide to priming and automaticity research. In H. Reis & C. Judd (Eds.), *Handbook of Research Methods in Social and Personality Psychology.* New York: Cambridge.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*, 1015–1026.

Cleland, A. A., & Pickering, M. J. (2006). Do writing and speaking employ the same syntactic representations? *Journal of Memory & Language*, *54*, 185–198.

DeCoster, J., & Claypool, H. M. (2004). A meta-analysis of priming effects on impression formation supporting a general model of informational biases. *Personality and Social Psychology Review, 8*, 2–27.

Dorjee, D., Devenney, L., & Thierry, G. (2010). Written words supersede pictures in priming semantic access: A P300 study. *Neuroreport: An International Journal for the Rapid Communication of Research in Neuroscience*, *21*, 887–891.

Eitam, B., & Higgins, E. T. (in press). Motivation in mental accessibility: Relevance of a representation (ROAR) as a new framework. *Personality and Social Psychology Compass*.

Epley, N., & Gilovich, T. (1999). Just going along: Nonconscious priming and conformity to social pressure. *Journal of Experimental Social Psychology, 35,* 578–589.

Fazio, R. H. (1986). How do attitudes guide behavior? In R. M. Sorrentino & E. T. Higgins (Eds.), *The handbook of motivation and cognition: Foundations of social behavior* (pp. 204–243). New York: Guilford Press.

Fazio, R. H. (1990). A practical guide to the use of response latency in social psychological research. In C. Hendrick & M. S. Clark (Eds.), *Review of Personality and Social Psychology: Vol. 11. Research Methods in Personality and Social Psychology* (pp. 74-97). Newbury Park, CA: Sage Publications.

Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty and J. A. Krosnick (Eds.), Attitude strength: Antecedents and consequences (pp. 247–282). Mahwah, NJ: Lawrence Erlbaum Associates.

Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude-perception and attitude-behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology, 51*, 505–514.

Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50*, 229–238.

Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology, 84,* 148–164.

Harvey, M. D., & Enzle, M. E. (1981). A cognitive model of social norms for understanding the transgression-helping effect. *Journal of Personality and Social Psychology*, *41*, 866 – 875.

Hertel, G., & Kerr, N. L. (2001). Priming in-group favoritism: The impact of normative scripts in the minimal group paradigm. *Journal of Experimental Social Psychology, 37,* 316–324.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability and salience. In E. T. Higgins & A.W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York: Guilford.

Higgins, E. T., & Brendl, C. M. (1995). Accessibility and applicability: Some "activation rules" influencing judgment. *Journal of Experimental Social Psychology, 31*, 218–243.

Higgins, E. T., King, G. A., & Mavin, G. H. (1982). Individual construct accessibility and subjective impressions and recall. *Journal of Personality and Social Psychology, 43*, 35–47.

Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology, 13*, 141–154.

Joly, J. E, & Stapel, D. A. (2008). Staff, miter, book, share: How attributes of Saint Nicholas induce normative behavior. *European Journal of Social Psychology, 34*, 1047–1056.

Kouider, S., & Dupoux, E. (2001). A functional disconnection between spoken and visual word recognition: Evidence from unconscious priming. *Cognition*, *82*, B35–B49.

Kruglanski, A., Friedland, N., & Farkash, E. (1984). Lay persons' sensitivity to statistical information: The case of high perceived relevance. *Journal of Personality and Social Psychology*, *46*, 503–518.

Lombardi, W. J., Higgins, E. T., & Bargh, J. A. (1987). The role of consciousness in priming effects on categorization. *Personality and Social Psychology Bulletin, 13,* 411–429.

Martin, L. L. (1986). Set/reset: Use and disuse of concepts in impression formation. *Journal of Personality and Social Psychology, 51*, 493–504.

Martin, L. L., Seta, J. J., & Crelia, R.A. (1990). Assimilation and contrast as a function of people's willingness and ability to expend effort in forming impressions. *Journal of Personality and Social Psychology, 59*, 27–37.

Nisbett, R. E., Krantz, D. H., Jepson, C., & Kunda, Z. (2002). The use of statistical heuristics in everyday inductive reasoning. In T. Gilovich, D. Griffin, D. Kahneman, T. Gilovich, D. Griffin, D. Kahneman (Eds.) , *Heuristics and biases: The psychology of intuitive judgment* (pp. 510–533). New York, NY US: Cambridge University Press.

Powell, M. C., & Fazio, R. H. (1984). Attitude accessibility as a function of repeated attitudinal expression. *Personality and Social Psychology Bulletin, 10*, 139–148.

Rhodes, N., & Ewoldsen, D. R. (2009). Attitude and norm accessibility and cigarette smoking. *Journal of Applied Social Psychology, 39*, 2355–2372.

Schwarz, N. (1994). Judgment in a social context: Biases, shortcomings and the logic of conversation. In M. Zanna (Ed.), *Advances in Experimental Social Psychology, Volume 26*, (pp. 123–162). San Diego: Academic Press.

Shah, J. (2003). Automatic for the people: How representations of significant others implicitly affect goal pursuit. *Journal of Personality and Social Psychology, 84,* 661–681.

Sherif, M. (1936). *The psychology of social norms*. New York: Harper.

Stapel, D. A., Joly, J. E, & Lindenberg, S. M. (2010). Being there with others: How people make environments norm-relevant. *British Journal of Social Psychology, 49*, 175–187.

Strack, F., Martin, L. L., & Schwarz, N. (1988). Priming and communication: Social determinants of information use in judgments of life satisfaction. *European Journal of Social Psychology, 18*, 429–442.

Trope, Y., & Ginossar, Z. (1988). On the use of statistical and nonstatistical knowledge: A problem-solving approach. In A.W. Kruglanski & D. Bar-Tal (Eds.), *The Social Psychology of Knowledge*, (pp. 209–230). New York: Cambridge University Press.

Valentine, T., Hollis, J., & Moore, V. (1998). On the relationship between reading, listening, and speaking: It's different for people's names. *Memory & Cognition*, *26*, 740–753.

Zukier, H., & Pepitone, A. (1984). Social roles and strategies in prediction: Some determinants of the use of base rate information. *Journal of Personality and Social Psychology, 47*, 349–360.

APPENDIX

Appendix A

Donald's Text Description (Higgins et al., 1997, p.145)

Donald spent a great amount of his time in search of what he liked to call excitement. He had already climbed Mt. McKinnley, shot the Colorado rapids in a kyack, driven in a demolition derby, and piloted a jet-powered boat - without knowing very much about boats. He had risked injury, and even death, a number of times. He was thinking, perhaps, he would do some skydiving or maybe cross the Atlantic in a sailboat. (adventurous/reckless) By the way he acted one could readily guess that Donald was well aware of his ability to do many things well. (self-confident/conceited) Other than business engagements, Donald's contacts with people were rather limited. He felt he didn't really need to rely on anyone. (independent/aloof) Once Donald made up his mind to do something it was good as done no matter how long it might take or how difficult the going might be. Only rarely did he change his mind even when it might well have been better if he had. (persistent/stubborn) [words in parentheses were not presented to participants]

Portuguese version and task presentation to participants

Investigação em Compreensão Verbal

Objectivo: Estudar os efeitos do processamento de texto em memória

1. Por favor, lê atentamente o texto seguinte.

Posteriormente serão colocadas questões acerca deste texto.

"O Pedro dedica grande parte do seu tempo à procura do que ele diz ser a sua diversão. Ele já subiu a Serra da Estrela de bicicleta, desceu o Zêzere de canoa, saltou em "bungee jumping" dum balão e pilotou um barco a motor – apesar de não saber muito acerca de barcos. Já arriscou ferir-se, e até morrer, algumas vezes. Agora está a pensar em experimentar saltar de pára-quedas ou, talvez, atravessar o Atlântico de barco à vela. Através da forma de agir consegue-se logo perceber que o Pedro tem bastante noção da sua aptidão para realizar facilmente diversas actividades. Para além do contexto de trabalho, os contactos do Pedro com outras pessoas são consideravelmente limitados. Ele sente que não necessita de contar com ninguém. Quando o Pedro decide que quer fazer uma coisa ninguém o consegue dissuadir, independentemente do tempo que possa levar ou do grau de dificuldade da actividade. Volta atrás muito raramente, prosseguindo até em situações em que teria sido melhor parar".

Appendix B

Table B1

Critical Statements Used in the Reaction-Time Task

Most people value adventurous individuals.
Most people value self-confident individuals.
Independent individuals are punished in our society.
Most people value persistent individuals.

Appendix C

Normative condition

2. Responde às seguintes questões, por favor.

a) Considerando apenas o comportamento do Pedro relativamente às suas actividades de ***diversão****, como é* ***a maioria das pessoas*** *o caracterizaria, utilizando apenas uma palavra?* _____

b) No que concerne a noção da ***aptidão*** *que o Pedro tem, como é* ***a maioria das pessoas*** *o caracterizaria, utilizando apenas uma palavra?*_____

c) Relativamente à atitude do Pedro quanto ao ***contacto*** *com outras pessoas, como é que* ***a maioria das pessoas*** *o caracterizaria, utilizando apenas uma palavra?* _____

d) Tendo em conta apenas a irreversibilidade das ***decisões*** *do Pedro, como é que* ***a maioria das pessoas*** *o caracterizaria, utilizando apenas uma palavra?* _____

3. Responde às seguintes questões, por favor.

a) Com que pessoas é que o Pedro ***convive****?*

b) De que forma o Pedro pensa atravessar o ***Atlântico****?*

c) O Pedro evidencia a sua ***aptidão****?*

d) Como é que o Pedro subiu a ***Serra da Estrela****?*

e) Como é que o Pedro designa as suas ***actividades favoritas****?*

f) Quantas vezes é que o Pedro voltou atrás após ter tomado uma ***decisão****?*

g) O Pedro sabe fazer ***snowboard****?*

h) Quais são os planos do Pedro para o ***futuro****?*

4. Tendo em consideração toda a informação relativa ao Pedro, que grau de negatividade/positividade seria utilizado pela **maioria das pessoas** para o caracterizar, numa escala de **-10** a **+10?** _____

5. Qual o teu grau de **certeza** quanto à resposta anterior, utilizando uma escala de 0 (nenhuma certeza) a 100 (certeza absoluta)? _____ %

6. Por favor, escreve as **palavras mnemónicas** que foram apresentadas na tarefa inicial de percepção o mais rapidamente possível.

_____

_____

Ambiguous condition

2. Responde às seguintes questões, por favor.

a) Considerando apenas o comportamento do Pedro relativamente às suas actividades de ***diversão****, como é que este poderia ser caracterizado, utilizando apenas uma palavra?* _____

b) No que concerne a noção da ***aptidão*** *que o Pedro tem, como é que este poderia ser caracterizado, utilizando apenas uma palavra?*_____

c) Relativamente à atitude do Pedro quanto ao ***contacto*** *com outras pessoas, como é que este poderia ser caracterizado, utilizando apenas uma palavra?* _____

d) Tendo em conta apenas a irreversibilidade das ***decisões*** *do Pedro, como é que este poderia ser caracterizado, utilizando apenas uma palavra?*_____

3. Responde às seguintes questões, por favor.

a) Com que pessoas é que o Pedro ***convive****?*

b) De que forma o Pedro pensa atravessar o ***Atlântico****?*

c) O Pedro evidencia a sua ***aptidão****?*

d) Como é que o Pedro subiu a ***Serra da Estrela****?*

e) Como é que o Pedro designa as suas ***actividades favoritas****?*

f) Quantas vezes é que o Pedro voltou atrás após ter tomado uma ***decisão****?*

g) O Pedro sabe fazer ***snowboard****?*

h) Quais são os planos do Pedro para o ***futuro****?*

4. Tendo em consideração toda a informação relativa ao Pedro, que grau de negatividade/positividade poderia ser utilizado para o caracterizar, numa escala de **-10** a **+10?** _____

5. Qual o teu grau de **certeza** quanto à resposta anterior, utilizando uma escala de 0 (nenhuma certeza) a 100 (certeza absoluta)? _____ %

6. Por favor, escreve as **palavras mnemónicas** que foram apresentadas na tarefa inicial de percepção o mais rapidamente possível.

_____

_____

Study 4

Is It Yours? Implicit Measurement of Normative Beliefs

Sílvia Luís

Lisbon University

P. Wesley Schultz

California State University, San Marcos

José Palma-Oliveira

Lisbon University

Abstract

The researchers discuss the importance and viability of measuring normative beliefs implicitly. Three variants of an "apple vs. candy bar" Implicit Association Test (IAT; A. G. Greenwald, D. E. McGhee, & J. L. K. Schwartz, 1998) were compared: a traditional IAT, a proposed normative IAT, and a personalized IAT (M. A. Olson & R. H. Fazio, 2004). In Study 1, accuracy and internal consistency results were very satisfactory, supporting the use the normative IAT measure as an accurate and reliable measure of social cognition. In Study 2, evidence of convergent validity failed to emerge clearly on the normative IAT, as well as on the other IATs, and is discussed if it was illustrated by a normative construction process. Nonetheless, evidence of predictive validity was established for the normative IAT, although not for the traditional and the personalized IATs. The need to invest in automaticity research in social norms is argued.

Keywords: Implicit Association Test (IAT); normative beliefs; attitudes; implicit preferences; automaticity.

Is It Yours?

Implicit Measurement of Normative Beliefs

The behaviors and beliefs of others strongly influence individuals own behaviors and judgments. Social psychologists have long illustrated how powerful and dramatic normative influence could be (e.g., Asch, 1955; Milgram, 1963; Sheriff, 1936) and various behavioral models consider social norms to be one of the antecedents of behavior (e.g., Fazio, 1986; Fishbein & Ajzen, 1975; Schwartz, 1973). Even though normative influence in judgment and behavior has been clearly established, we argue such influence might, sometimes, be underrated. Most studies focusing on the relations between normative beliefs and behavior have relied on data obtained by self-reports in questionnaires, i.e., explicit measures. Nevertheless, there is evidence that individuals commonly have limited awareness of the influence of normative processes (e.g., Nolan, Schultz, Cialdini, Goldstein, & Griskeviclus, 2008). As Cialdini claimed, "*as a rule, people grossly underestimate the guiding role that others play in personal choices*" [italic added, bold and uppercases removed] (2005, p.158). Therefore, the sole use of explicit measures might not be sufficient to capture normative influence on behavior.

This study explores the relevance and viability of measuring normative beliefs implicitly by adapting the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). The IAT was designed for measuring evaluative associations that underlie implicit attitudes. However, there has been some controversy regarding the nature of the associations measured. Several researchers have argued that the IAT measure is influenced by extrapersonal, i.e., normative, associations, thus yielding an opportunity to implicitly measure normative associations.

Automaticity Research and Norms

Since the mid 1990s, research using indirect or implicit measurement procedures has demonstrated that a large part of social behavior can be ruled by automatic processes (see Bargh, 2007). Research on the attitudes field is a good example. Attitudes, evaluations as to whether an event or object is good or bad, are a fundamental variable in behavioral models, paralleling social norms (e.g., Fishbein & Ajzen, 1975). Until some decades ago, attitudes were commonly assumed to be made consciously and intentionally (e.g., Anderson, 1971). However, a substantial body of evidence has now accumulated that they often influence behavior automatically. Attitudes can be developed incidentally, through mere repeated exposure (Zajonc, 1968) or through associative learning (De Houwer, Thomas, & Baeyens, 2001; Olson & Fazio, 2001). Attitudes can also be activated automatically in the presence of the attitude object, without one's need to think about one's evaluations or even be aware that one has evaluated something as good or bad (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Furthermore, implicit measures of attitudes predict judgment, behavior and physiological measures (Greenwald, Poehlman, Uhlmann, & Banaji, 2009).

On the norms field, few studies have dealt with automaticity issues or used implicit measures. Norms tended to be exclusively measured through self-report in questionnaires, assuming that individuals are fully aware of and can retrieve the reasons that explain their behavior. Yet, this does not seem to be always the case. Literature on conformity and compliance characterizes the processes of social influence as subtle, indirect and outside awareness (see Cialdini & Goldstein, 2004). Field experiments on energy conservation clearly evidenced that normative influence is underdetected by individuals (Nolan et al., 2008). Although normative social influence has produced the greatest change in energy- conservation behavior, when compared to information

highlighting other reasons to conserve (e.g., environmental protection or self-interest), individuals rated the normative information as the least motivating. Laboratory experiments also evidenced that normative behavior does not always occurs intentionally and consciously. Situational social norms can be automatically activated by specific environments (Aarts & Dijksterhuis, 2003), norm-related symbols (Joly & Stapel, 2008) or norm-related words (e.g. Epley & Gilovich, 1999) to guide cognitions or behavior without the individual's awareness. For example, individuals expecting to go to a library responded faster to words related to the normative behavior (silence words) on a lexical decision task (Aarts & Dijksterhuis, 2003). Besides environmental features, peoples' inferred behavior (e.g., Cialdini, Reno, & Kallgren, 1990), or people's mere presence (e.g., Baldwin, Carrel, & Lopez; 1990; Fitzsimons & Bargh, 2003; Stapel, Joli, & Lindenberg, 2010) can also automatically activate norms that people follow without awareness. For instance, the activation of people's interpersonal goals may lead people to behave in line with the normative goal content of those relationships without their knowledge or awareness. Individuals that had answered questions about a friend were found more willing to help an experimenter than individuals that had answered the same questions about a coworker (Fitzsimons & Bargh, 2003). Moreover, there is evidence that implicit normative measures can explain behavior better than explicit measures (Rhodes & Ewoldsen, 2009). In particular, social norms chronic accessibility has accounted for smoking behavior variability beyond both normative and attitudinal self-report measures.

In line with these evidences, we highlight the importance of investigating norms using also implicit measures. Automaticity develops for functional reasons. Because of regularities in their world, individuals are exposed repeatedly to similar events that activate particular knowledge units. It is efficient for individuals to process such

regularities quickly and effortlessly. When an event is novel or different then it is functional to initiate controlled processing (see Bargh, 1996).

Implicit Association Test

Self-report measures have been criticized for their susceptibility to self-presentation (Paulhus, 1984) and, of most importance to us, their inability to capture mental contents that are inaccessible to introspection (Nisbett & Wilson, 1977). These types of measures usually emphasize intentionality and promote the use of controlled processes. In contrast, implicit measures allow inferences about mental content through individual's performance on experimental paradigms without requiring conscious introspection (see Gawronski & Sritharan, 2010). Implicit measures are especially useful in predicting behaviors that are spontaneous and occur under conditions of reduced cognitive capacity (e.g., Fazio, Jackson, Dunton, & Williams, 1995; Hofmann, Rauch, & Gawronski, 2007)[1]. A large number of implicit measurement techniques have been recently developed (see Fazio & Olson, 2003). We selected the IAT because it's easy to administer, reliable, robust and produces large effect sizes (see Greenwald et al, 2009). The test was developed by Greenwald, McGhee and Schwartz (1998) to measure the evaluative associations that underlie implicit attitudes. However, within a few years time it has become a widely used tool to study various types of associations in memory. It measures the strengths of associations between concepts through binary categorization tasks. In particular, the test procedure forces participants to associate two opposite concepts (e.g., "White" vs. "Black") with positive and negative attribute

[1] It is necessary to note that neither explicit nor implicit measures are likely to represent a process-pure measure: controlled processes can contaminate performance in indirect tests and automatic processes may bias responses to self-report measures (see Payne, Jacoby, & Lambert, 2005).

dimensions (e.g., “pleasant” vs. “unpleasant”) by using one of two key assignments. The rationale underlying the IAT is that quick and accurate responses should be facilitated when the key assignments combine concepts that are strongly associated in memory.

Our reasoning for selecting IAT to measure normative knowledge did not bear only in its psychometric qualities. There is evidence that the IAT might measure normative associations. According to Olson and Fazio (2004), the IAT may prompt the recollection of various types of information that are available in memory and can be attitude-irrelevant or “extrapersonal”. One of the arguments that sustained their proposal was previous findings of dissociation between the IAT and explicit attitudinal measures and IAT’s inability to predict behavior in the domain of apples vs. candy bars (see Karpinski & Hilton, 2001). Apples and candy bars were considered morally neutral objects, not associated to high self-presentation concerns, thus correlations between implicit and explicit measures were expected. Moreover, choosing between an apple and a candy bar was considered a relatively spontaneous behavior hence it was expected to be well predicted by implicit measures. Olson and Fazio (2004) interpreted the previous findings as indirect evidence of IAT’s contamination by extrapersonal associations, in particular social associations. To minimize these associations, Olson and Fazio (2004) proposed a personalized variant of the IAT changing the ambiguous category labels “pleasant” and “unpleasant” to the more defined labels “I like” and “I don’t like” and removing error feedback that framed the test in a normative way. The personalized IAT showed stronger correlations with explicit attitude measures and was strongly related with behavioral intentional choice (Olson & Fazio, 2004, Experiment 3). In addition, IAT’s vulnerability to extrapersonal associations was also proved directly in experimental laboratory studies (Han, Olson & Fazio, 2006; Han, Czellar,

Olson, & Fazio, 2010). Of most importance to our proposal, a cultural variant of the implicit association test has also been developed (Spencer, Peach, Yoshida, & Zanna, 2010; Yoshida, 2009; Yoshida, Peach, Spencer, & Zanna, 2006). In this variant, the category labels "pleasant" and "unpleasant" were changed to normative labels, such as "most people like" and "most people don't like", and error feedback was generally removed. These alterations led to a measure that was distinct from the personalized and traditional IAT measures suggesting few procedural changes might allow IAT to measure normative associative information.

This research has been quite promising. However, there was some evidence suggesting that procedural changes must be made with prudence. IAT's implicit character might be altered by increasing an explicit evaluation of concepts. Nosek and Hansen (2008a) found greater error rates on personalized than traditional IATs when the explicit evaluation of target categories mismatched the key assignment. Comparisons between the traditional IAT, the personalized, and a hybrid variant that removed error feedback but did not change the category labels led to the argument that both label changes and error feedback removal increased recoding to an explicit evaluation task. We draw attention to the fact that a reversed hybrid model where the labels would be changed but the error feedback would not be removed was not tested.

Extrapersonal vs. Personal Controversy

In parallel with the flexibility of the IAT measure, studies have spurred a controversy regarding the nature of the associations tapped by the IAT (see Gawronski, Peters & LeBel, 2008; Olson, Fazio & Han, 2009). Does the IAT measure extrapersonal or personal associations? We suggest the IAT can access both. Nosek and Hansen (2008b) have noticed an aspect that is crucial to our proposal: apart from of being or not

personal, associations' influence depends on their availability, accessibility, salience, and applicability. Socio-cognitive perspective has demonstrated that knowledge structures are expected to operate in accordance with activation rules (Higgins, 1996). The concept of applicability was of most relevance to us. It refers to the fit between a mentally active concept, such as a social norm or an attitude, and an external stimulus, like the IAT labels. The greater the overlap between the features of a knowledge structure and the attended features of a stimulus, the greater the knowledge structure applicability to a stimulus. If traditional IAT labels are vague, or ambiguous, the overlap between these and the features of attitudes or social norms might not be sufficient to systematically confer stronger applicability of either attitudes or norms to the IAT labels when individuals are solving IAT's task. In weak applicability conditions, knowledge structures with strong accessibility tend to be used (see Higgins & Brendl, 1995). Therefore, we suggest attitudes, social norms, or any other knowledge structures, could theoretically be measured using IAT, depending on their accessibility.

The Present Research

This proposal combines a gap in automatic normative processes research with the IAT's potential to measure normative associative information. Norms are complex knowledge structures capable of becoming activated in the mere presence of environmental features related to their content, such as the presence of others. We argue they can be implicitly measured using the IAT. We focused on a specific content of normative knowledge: individual beliefs towards what people like and don't like. This normative content was social and was expected to have an injunctive nature (see Cialdini et al., 1990). Focusing on others' preferences, not actual behaviors, we were

focusing more specifically on what was socially approved than on what was typically done.

We reported two studies which were designed to explore IAT's ability and meaning in measuring implicitly normative beliefs. Individual's performance was systematically compared on three variants of an "apple" vs. "candy bar" IAT. The main characteristics of the IAT were maintained. In particular, feedback was provided in all the variants to frame the categorization nature of the test while stimulating participants' accuracy. Only the labels varied between variants: on the traditional IAT, we kept the labels "pleasant" and "unpleasant" (Greenwald et al., 1998), on the normalized IAT, we used the labels "people like" and "people do not like", and on the personalized IAT we maintained the labels "I like" and "I do not like" (Olson & Fazio, 2004). We explored "apple" and "candy bar" in an attempt to understand why supposedly morally neutral and everyday objects have elicited different implicit and explicit responses.

In Study 1, we investigated the adequacy of specific performance indicators and compared them on the traditional and the normative IATs. A normative IAT would provide a reliable measure of implicit social cognition if its accuracy and internal reliability were, at least, as high as the traditional IAT's accuracy and internal reliability. Aiming to clarify the extrapersonal vs. personal controversy we equally tested the personalized IAT, although our main interest was on the normative IAT.

Study 1

Method

Participants. Eighty-three students (13 males), enrolled in introductory psychology courses at the California State University of San Marcos and the Riverside Community College, participated in this study. All participants received course credits for their participation.

Materials and procedure. Participants were invited to take part in a web-based study. After providing their informed consent, they were randomly assigned to the normative, the personalized or the traditional IAT conditions. Participants were debriefed and thanked.

An online version of the IAT was introduced to participants as an implicit association game, "a test of reflexes and quick thinking". The *apple* concept was represented by the five most grown varieties of apples in the USA: *red delicious*, *gala*, *golden delicious*, *granny smith*, and *fuji* (US Apple Association, 2006). *Candy bar* was represented by five brands of candy bars taken from Olson and Fazio (2004, Experiment 3): *snickers*, *hershey's*, *milky way*, *kit kat*, and *reese's*. The positively-negatively valenced items were also the same as those used by Olson and Fazio: *cheer*, *pleasure*, *happy*, *love*, and *peace*; *death*, *filth*, *jail*, *murder*, and *ugly*. There were seven blocks: the first two were practice blocks of 10 trials each, and consisted of the categorization of apple and candy bar representative items and positively and negatively valenced items; the following two blocks were compatible test combined blocks of 40 and 80 trials. Apple-representative items were associated with positive category and candy bar-representative items were associated with negative category. Block 5 was a practice block of 10 trials for candy bar and apple-related items. The last two blocks were

incompatible test combined blocks of 40 and 80 trials. Candy bar-representative items were associated with positive category, and apple-representative items were associated with negative category. Stimulus rested at the middle of the screen until correctly categorized. Immediately following correct categorization of the stimulus the next stimulus appeared for categorization. Sound feedback was provided both for correct and incorrect responses. To give a game-like feel, built-in feedback reminders popped up on the screen, reminding participants to catch as quickly and accurately as possible.

D-scores were computed based on Greenwald, Nosek and Banaji (2003) improved scoring algorithm for the IAT. This scoring procedure used both the compatible and incompatible IAT trials to create a D-score. The D-score was computed by calculating the difference between the reaction time of the compatible and incompatible and dividing the difference by the standard deviation. To account for outliers and errors, response latencies (for each stimulus) lower than 300 milliseconds (ms) were excluded from further analysis. This exclusion allowed us to control for participants being very fast and to control for error. Calculations were made using data encompassing the total time since a stimulus was presented until a correct response was made, regardless of whether it was preceded by an incorrect response. The D-score provided a numeric index of the degree to which each person associates “apple” with “pleasant”, focusing on the traditional IAT. There is no absolute upper or lower limit, even though scores generally range from -2 to +2, indicating stronger associations with candy bars or apples respectively. Scores of zero indicate no difference (i.e., equal association strength between apple-unpleasant and apple-pleasant).

Results and Discussion

The traditional IAT (N = 29) was the benchmark for performance indicators on the normative (N = 25) and the personalized (N = 29) IATs. To explore if a normative IAT could be a reliable measure for implicit social cognition we have analyzed some of its psychometric properties and tested if these diverged from the traditional IAT. In particular, we compared participants' overall accuracy, error and response time on IAT blocks and internal reliability. These analyses were also performed separately for the personalized IAT, to control for effects that could be diluted in a joint analysis with the traditional and the normative IATs. Overall, the analyses of the performance indicators evidenced no differences between IATs.

All statistical tests were bilateral and an alpha level of .050 was used.

Accuracy. Mean accuracy was high (M = 94.21%, SD = 4.18), varying between 83% and 100%. Participants responded correctly at first try in 94.92% of the trials, both in the traditional and on the normative IATs (SDs = 3.27, and 4.44, respectively), thus accuracy did not differ between the traditional and the normative IATs, $t(52) = 0.00$, p = .996. On the personalized IAT participants responded correctly in 92.89% of the trials (SD = 4.56), and accuracy was marginally lower than on the traditional IAT, $t(56)$ = 1.95, p = .057.

Block error and response time. To better understand participants' performance on the IATs we also compared mean error and response time at block level. We expected to find no differences between IATs. Four types of IAT blocks were analyzed: compatible practice, compatible test, incompatible practice, and incompatible test. Measures of central tendency for the IATs and tests for differences between traditional and normative IATs, and between traditional and personalized IATs are presented on Table 1.

Table 1

Measures of Central Tendency for Block Error Percentage and Response Time for IATs and Mean Tests between the Traditional and the Normative IATs and between the Traditional and the Personalized IATs

Block type	*M (SD)* Traditional IAT	*M (SD)* Normative IAT	*t*(52)	*M (SD)* Personalized IAT	*t*(56)
Error percentage					
C Practice	3.96 (4.04)	3.00 (3.95)	0.88	4.22 (4.39)	-0.23
C Test	3.77 (2.96)	4.33 (5.07)	-0.50	4.46 (4.08)	-0.74
I Practice	9.31 (5.54)	6.80 (6.27)	1.56	13.88 (10.12)	-2.13*
I Test	4.80 (4.19)	6.02 (4.93)	-0.98	7.77 (6.67)	-2.03*
Response time					
C Practice	737.51 (132.25)	787.72 (230.17)	-1.00	774.86 (164.18)	-0.95
C Test	703.93 (111.08)	743.56 (158.05)	-1.07	696.28 (99.18)	0.28
I Practice	1023.76 (250.09)	1003.28 (176.30)	0.34	1022.24 (253.37)	0.02
I Test	818.90 (152.60)	839.48 (159.00)	-0.48	829.34 (191.35)	-0.23

Note. IAT = Implicit Attitude Test; C = Compatible; I = Incompatible. Percentage of error indicates the percentage of stimuli in block to which the user responded incorrectly at first try. Response time indicates the total time since a stimulus is present until a correct response is made in milliseconds, regardless it being preceded by an incorrect response.

* $p < .050$.

We tested to see if the average percentage of stimuli to which the participants responded incorrectly at first try in the 4 block types on the traditional IAT differed from the normative IAT. No differences were found (see top of Table 1, first three columns). Blocks' mean response time in the traditional and in the normative IATs was also compared. No differences were found (see bottom of Table 1, first three columns).

Block error in the traditional and in the personalized IATs was also compared. In the compatible-practice and compatible-test blocks we found no differences between IATs. However, in the incompatible-practice and in the incompatible-test blocks, participants who completed the personalized IAT made, in average, more errors than the participants who completed the traditional IAT (see top of Table 1, first, fourth, and fifth column). Nonetheless, comparing blocks' mean response time in the traditional and personalized IATs we found no differences in any block type (see bottom of Table 1, first, fourth, and fifth column).

Internal reliability. Internal reliability was estimated by correlating D-scores calculated for practice and test blocks in the IATs. D-scores in practice blocks and test blocks were strongly and very significantly correlated in the traditional IAT, $r = .54$, $p = .002$, the normative IAT, $r = .53$, $p = .007$, and in the personalized IAT, $r = .69$, $p < .001$. There were no differences in the correlation coefficients between IATs, neither between the traditional and normative IATs ($Z = 0.67$, $p = .946$) nor between the traditional and the personalized IATs ($Z = -0.90$, $p = .370$). Measures of internal reliability, apart from not diverging from the traditional measure, were quite satisfactory.

To assure for the IAT measures' precision we excluded participants with inconsistent results and tested to see if this consistency limiter could be equally applied in IATs. Participants' consistency was calculated by the difference between scores in

practice and test blocks. Individuals whose score was higher than 1 or lower than -1 were considered inconsistent. Three participants had inconsistent scores: one completed the traditional IAT and two the normative IAT. Results supported a safe use of also this limiter: inconsistency incidence was independent from IAT (p = 1; Fisher's exact test), suggesting the limiter can be used in traditional and normative IATs. Excluding from analyses participants with inconsistent results, internal reliability for the traditional IAT becomes r = .59, p = .001, and, for the normative IAT, becomes r = .68, p < .001. No differences emerged between the correlation coefficients of the traditional and normative IATs (Z = -0.51, p = .609) nor between the traditional and the personalized IATs (Z = -0.64, p = .525).

IATs measures. D-scores were computed for each IAT. A mild preference for apples emerged in the traditional (M = 0.59, SD = 0.35), the normative (M = 0.54, SD = 0.37), and the personalized IAT (M = 0.52, SD = 0.48). No mean differences existed between IAT measures, neither between the normative and the personalized IATs, t(52) = 0.21, p = .832, nor between the normative and the traditional IATs, t(52) = -0.49, p = .626. These results replicate Olson and Fazio's findings of similar implicit preferences for apples over candy bars using the traditional and the personalized IAT (2004, Experiment 3).

Taken together, Study 1 results showed that the normative IAT's performance indicators are adequate and similar to those of traditional IAT. This supported the possibility of using normative IAT as an accurate and reliable measure of social cognition. The personalized IAT results were also quite satisfactory, even though participants' error was relatively higher in the incompatible blocks.

Study 2

In Study 2, we investigated the normative IAT's criterion-related validity, in particular convergent and predictive validity.

Literature is not clear on how IAT's convergent validity should be calculated or interpreted. A measure's convergent validity is typically established by demonstrating that it displays theoretically-expected correlations with other measures. Greenwald et al. (1998) calculated IAT's convergent validity by correlating it with explicit attitudinal measures. However, one of the reasons that spurred the use of implicit measures was the explicit measures' inability to capture mental contents and operations which are inaccessible to introspection (Nisbett & Wilson, 1977). Thus, to what extend should these measures correlate? Greenwald et al. (1998) illustrated both clear evidence of convergent validity (Experiment 1) and evidence on how correlations were not so simple and direct in socially-sensitive domains (Experiments 2 and 3), advising it was not clear if correlations were evidence for convergence among different methods of measuring attitudes, or divergence of the constructs represented by implicit *vs.* explicit attitude measures. In addition, since the IAT was published, several moderators of the relationship between the traditional IAT and explicit evaluations have been identified (see Nosek, 2005). Other researchers have explored convergent validity by correlating different types of implicit measures; however, these estimates have not been clearly interpreted either (e.g., Cunningham, Preacher, & Banaji, 2001; Olson & Fazio, 2003). Therefore, this may not be the best way to estimate IAT's convergent validity. Acknowledging this potential limitation, we decided to explore how IATs' measures related to explicit measures of attitudes and norms. We expected the traditional IAT to have significant correlations with both normative and attitudinal explicit measures (hypothesis 1); the normative IAT had direct significant correlations with normative

explicit measures, especially with injunctive-type measures (hypothesis 2); and the personalized IAT had direct significant correlations with attitudinal explicit measures (hypothesis 3).

In addition, we also explored IATs relations with eating frequency, for this measure can be an indicator of automatic processes on behavior. Logan's theory of automatization (1988) suggests that the repetition of a response increases the likelihood that it will be automatically activated in the future.

To test for predictive validity we analyzed the relations between IAT measures and behavioral intention. Following on behavioral models that have long specified attitudes and norms as important predictors of behavior (e.g., Fishbein & Ajzen, 1975), we assumed that both implicit attitudes and norms would be behavior predictors and, consequently, expected that both the normative and the personalized IATs were significant behavioral intention predictors (hypothesis 4). If the normative IAT proved to be a predictor of behavioral intention, then we had evidence of its predictive validity as a normative measure of implicit social cognition. Predictive validity was of the utmost importance because it could relate automatic processes in normative influence with behavior and evidence the relevance of using implicit normative measures.

We did not expect the traditional IAT to be a significant behavioral intention predictor (hypothesis 5). As we have argued, label ambiguity might reduce its validity and, also, previous studies had failed to find the traditional IAT measure a behavior predictor (Karpinski & Hilton, 2001, Study 2), or related to behavioral intention (Olson & Fazio, 2004, Experiment 3), for the "apple *vs.* candy bar" domain.

Method

Participants. One-hundred and forty-eight students (31 males), enrolled in introductory psychology courses at the California State University of San Marcos, participated in this study and were given course credits.

Materials and procedure. Participants were invited to take part in a web-based study. After providing their informed consent, they were randomly assigned to either the normative, personalized or traditional IAT conditions, and asked to participate in a survey. In between IAT and the questionnaire, a scrambled-word filler task was introduced (see questionnaire and filler task in Appendix). Participants were debriefed and thanked.

IATs' measures. Instructions, procedures and calculations were analogous to those of Study 1, with the exception of trial numbers, which were modeled after Greenwald et al. (2003). The tests were composed of seven blocks. The first two were practice blocks of 20 trials each and consisted in the categorization of apple and candy bar representative items and positively and negatively valenced items. Blocks 3 and 4 were compatible test combined blocks of 20 and 40 trials. Apple-representative items were associated with the positive category and candy bar-representative items were associated with the negative category. Block 5 was a practice block of 20 trials for candy bar- and apple-related items. Blocks 6 and 7 were incompatible-test combined blocks of 40 trials each. Candy bar-representative items were associated with the positive category, and apple-representative items were associated with the negative category. The order of the test's combined blocks was not counterbalanced. Instead, we increased to 40 the number of trials in Block 6 in order to minimize order effects (see Greenwald et al., 2003).

Filler task. Before the questionnaire, participants were presented with a scrambled-word filler task in order to minimize effects of differential knowledge activation caused by IATs' conditions. Participants were asked to unscramble a list of 10 words in 5 minutes. If after 5 minutes they were not able to unscramble any or all of the words they were instructed to proceed to the questionnaire.

Explicit measures. The online questionnaire was developed to measure explicit attitudes, social norms and intentional behavior (see questionnaire in Appendix). Attitudes towards apples and candy bars were measured using a "feeling thermometer" and a semantic differential. In the "feeling thermometer" individuals were asked to describe their general level of "warmth" or "coolness" towards the concepts by writing the appropriate temperature. The thermometer was numerically labeled at 10-degree intervals from 0 to 99 and anchored at the 0, 50, and 99 points with the words *cold or unfavorable*, *neutral*, and *warm or favorable*, respectively. In the semantic differential individuals were asked to circle the numbers better describing the concepts. Five dimensions (*Ugly–Beautiful, Bad–Good, Unpleasant–Pleasant, Foolish–Wise,* and *Awful–Nice*) were rated on a 7-point scale ranging from -3 (the negative pole) to 3 (the positive pole), and participants are instructed to circle "zero" if the anchoring adjectives were irrelevant to the concept.

We used several types of normative measures to have a better understanding of the relations between IATs and explicit normative measures. For exploratory purposes, we focused not only on beliefs towards *liking* but also towards *eating* apples and candy bars. Considering the distinction between descriptive and injunctive normative features (see Cialdini et al., 1990) we asked participants to what extent they believed the majority of other people liked and ate apples and candy bars, and to what extent they believed the majority of other people considered appropriate to like and to eat them, on

a 7- point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The "feeling thermometer" and the semantic differential were also adapted in order to provide normative versions of these measures. In the feeling thermometer individuals were asked to describe most people's general level of warmth or coolness. In the semantic differential, individuals were asked to circle the numbers that most people considered best described the concepts.

Apple- and candy bar-eating behavior measures included eating frequency, using a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), and behavioral intention in forced choice between an apple and a candy bar.

Results and Discussion

All statistical tests were bilateral and an alpha level of .050 was used.

Participant's exclusions. Error and consistency limiters were considered to exclude participants from analyses. No participant was excluded for committing a high percentage of error (>20%), but 10 participants were excluded for having inconsistent results (consistency was calculated as shown in Study 1). The final sample had 145 participants (29 males); 49 participants had been assigned to the traditional IAT, 48 participants to the normative IAT and 49 participants to the personalized IAT. As in Study 1, inconsistency incidence was also independent from IAT, considering both the traditional and normative IATs (p = .436; Fisher's exact test) and the traditional and personalized IATs (p = .436; Fisher's exact test).

Accuracy and internal reliability. Mean accuracy was high (M = 94.10, SD = 3.80). Participants responded correctly in 94.43% of the trials in the traditional IAT, 94.82% in the normative IAT and 93.66% in the personalized IAT. Accuracy on the

traditional IAT did not differ from that of the normative IAT, $t(95) = 1.03$, $p = .306$, or accuracy in the personalized IAT, $t(95) = 0.33$, $p = .704$.

Measures of internal reliability, besides not diverging from traditional measure, were again quite satisfactory. D-scores on practice blocks and test blocks were strongly and significantly correlated in the traditional IAT, $r = .50$, $p < .001$, the normative IAT, $r = .33$, $p = .023$, and personalized IAT, $r = .43$, $p = .002$. There were no differences between the correlation coefficients of the traditional and normative IATs ($Z = 1.01$, $p = .312$) nor between the correlation coefficients of the traditional and personalized IATs ($Z = 0.43$, $p = .667$). Results replicated Study 1 findings and provided cumulative evidence for the normative IAT validity.

IATs' measures. D-scores for each IAT were computed as in Study 1. Results suggested similar implicit normative and attitudinal preferences for apples over candy bars, replicating Study 1 findings. A mild preference for apples emerged in the traditional ($M = .46$, $SD = .41$), normative ($M = .47$, $SD = .40$) and personalized ($M = .47$, $SD = .41$) IATs. No differences were found, neither between normative and personalized IATs, $t(94) = - 0.05$, $p = .956$, nor between normative and traditional IATs, $t(95) = 0.18$, $p = .858$.

Explicit measures. Participants unscrambled an average of eight words before completing the questionnaire. Before examining how IAT results related to explicit measures, we first computed relative measures that were comparable to IAT measures by subtracting the candy bar from the apple's explicit measures. Higher numbers indicate more positive responses for apples than for candy bars. In addition, items from the semantic differential were strongly related, and so we averaged them for each object on the attitudinal ($\alpha_{apple} = .83$; $\alpha_{candy\ bar} = .77$) and normative version ($\alpha_{apple} = .81$; $\alpha_{candy\ bar} = .74$). Measures of central tendency and t tests against zero are presented in Table 2.

Table 2

Measures of Central Tendency and t Tests against Zero for the Explicit Measures

Measure	*M*	*SD*	*t (df)*
Descriptive Norm Like	-1.01	1.31	-9.27 (143)***
Injunctive Norm Like	0.95	1.89	5.99 (141)***
Descriptive Norm Eat	-0.80	1.42	-6.68 (140)***
Injunctive Norm Eat	1.94	2.16	10.80 (143)***
Feeling Thermometer Attitude	-2.00	30.57	-0.79 (142)
Semantic Differential Attitude	0.68	1.36	5.95 (142)***
Feeling Thermometer Norm	-3.30	32.60	-1.22 (143)
Semantic Differential Norm	0.55	1.50	4.36 (142)***
Eating Frequency	0.46	2.16	2.54 (143)*

Note. Higher numbers indicate more positive answers to apples relative to candy bars. * $p < .050$, *** $p < .001$.

Results suggest that apples and candy bars are more socially-complex objects than previous research might have assumed. Only 2 of the 9 explicit measures explored did not reveal mean preferences: the attitudinal and normative feeling thermometers, the average level of warmth or coolness individuals used, and believed others used, to describe apples and candy bars.

In concordance with IATs results, most explicit normative and attitudinal measures revealed a significant mean positivity of apples over candy bars. Measures of injunctive norms indicated participants believed that others approved of liking and eating apples; and the semantic differentials revealed participants described apples with more positive words than candy bars, and believed others also described apples more positively. Nonetheless, descriptive normative measures towards *liking* and *eating* revealed a significant mean positivity of candy bars over apples, in opposition to the IAT results. Participants believed others liked and ate more candy bars than apples.

So far, implicit IAT measures have pointed out a preference for apples and explicit measures have evidenced preference oppositions. Will the IATs relate differently with explicit measures?

Relationships between IAT and explicit measures. IAT measures, albeit expressing similar preferences for apples over candy bars, correlated differently with explicit measures (see Table 3).

Table 3

Correlations between Explicit Measures and Traditional, Personalized and Normative IATs

Measure	Traditional IAT	Normative IAT	Personalized IAT
Descriptive Norm Like	-.07	-.00	.14
Injunctive Norm Like	.30*	.14	.10
Descriptive Norm Eat	-.01	-.11	.17
Injunctive Norm Eat	.11	.07	.16
Feeling Thermometer Attitude	.27	.29*	.23
Semantic Differential Attitude	.26	.31*	.04
Feeling Thermometer Norm	.12	-.06	.10
Semantic Differential Norm	.18	.04	.16
Eating Frequency	.28	.32*	.10

Note. IAT = Implicit Attitude Test.

* $p < .050$, ** $p < .010$.

The hypothesis that the traditional IAT measure was significantly correlated with both explicit norms and attitudes (hypothesis 1) was partially refuted. The traditional IAT correlated moderately and directly with the injunctive norm towards *liking* and with the attitudinal measures (feeling thermometer and semantic differential), although statistical significance was only achieved for the first measure.

The hypothesis that the normative IAT was significantly directly correlated with explicit norms (hypothesis 2) was refuted. Whereas the injunctive explicit measures were weakly and directly related to the IAT, the descriptive explicit measures were very weakly and inversely related to the IAT, and none of the correlations reached statistical significance. Instead, the normative IAT was significantly moderately and directly correlated with attitudes (feeling thermometer and semantic differential). The normative IAT was also significantly moderately and directly correlated with eating frequency, the measure we used as an additional indicator of automaticity.

The hypothesis that the personalized IAT measure was significantly directly correlated with explicit attitudes (hypothesis 3) was also refuted. The personalized IAT was not significantly correlated to any explicit measure, although it correlated moderately and directly with the attitudinal feeling thermometer.

Estimating IATs' convergent validity through correlations with explicit measures, results suggested that any of the IATs had convergent validity. Instead, we reason that results supported our argument that such estimates cannot be clearly interpreted as lack of convergent validity. The unexpected correlations between the normative IAT and explicit attitudinal measures might provide indirect evidence for our argument. We believe these results are reflecting a normative inferential process. The normative IAT we used was actually generalist and focused on people in general. When in the absence of exposure to a specific target group, the individual's self-knowledge might be the main source of information to infer others' perceptions or behaviors (see Miller & Prentice, 1996). Table 3 correlations between attitudinal explicit measures and the normative IAT appear to reflect such an inferential process: individuals' explicit attitudes were significantly and directly related to their implicit estimate of others'

attitudes. Similar findings for apples and candy bars were also reported by Yoshida (2009, Study 1b).

Predicting behavioral intention. Despite most measures having illustrated a preference for apples, on the behavioral intention forced choice between an apple and a candy bar only 56% of the participants actually chose an apple. To test if our measures could predict the choice of an apple we conducted several logistic regressions by entering IAT and explicit measures as separate predictors (see Table 4).

The hypothesis that the traditional IAT measure would not predict behavioral intention (hypothesis 5) was not refuted, replicating Karpinsky and Hilton's findings (2001, Experiment 2). However, the hypothesis that the normative and the personalized IATs would both be significant predictors of behavioral intention (hypothesis 4) was partially refuted. The only IAT that predicted behavioral intention was the normative IAT. This result is not unexpected: explicit measures illustrated that preferences for apples and candy bars were socially complex (see Table 2).

A logistic regression model with the normative IAT, entered alone, predicted the behavioral intention choice between apple and candy bar with statistical significance ($\chi^2(1, N= 48) = 7.45$, $p = .006$), explaining a considerable amount of choice variability (Nagelkerke = .20) and classifying correctly 71% of the participants' choices. Therefore, the normative IAT had predictive validity for intending to choose an apple or a candy bar. Implicit normative measures can contribute to understanding normative influence in behavior.

The personalized IAT did not predict behavioral intention. Olson and Fazio's finding, of a relation between the personalized IAT and behavioral intention, didn't emerge in our data (2004, Experiment 3). Our study mainly diverged on the provision of

feedback, which we consider an important feature of the IAT's implicit nature. It is possible that differences are related to feedback provision.

Table 4

Summary of Logistic Regressions Predicting Behavioral Intentional Choice

Measure	B	Odds ratio	B	Odds ratio	X^2_W	*p*
Traditional IAT	0.25	1.29	0.10	1.11	0.13	.717
Normative IAT	2.28	9.76	0.92	2.50	6.10	.014
Personalized IAT	-0.17	0.84	-0.07	0.93	0.05	.816
Descriptive Norm *Like*	0.52	1.67	0.66	1.94	10.50	.001
Injunctive Norm *Like*	0.22	1.24	0.40	1.50	5.25	.022
Descriptive Norm *Eat*	0.17	1.18	0.22	1.25	1.83	.176
Injunctive Norm *Eat*	0.22	1.24	0.47	1.61	6.99	.008
Feeling Thermometer Attitude	0.05	1.05	1.35	3.85	23.74	<.001
Semantic Differential Attitude	1.00	2.72	1.25	3.50	22.41	<.001
Feeling Thermometer Norm	0.01	1.01	0.32	1.37	3.74	.053
Semantic Differential Norm	0.23	1.26	0.36	1.44	3.78	.052
Eating Frequency	1.00	2.73	1.91	6.73	35.24	<.001

Note. IAT = Implicit Attitude Test. All variables were entered separately. X^2_W and *p* statistics refer to B values.

Within explicit measures, all measures expect the descriptive norm towards eating apples or candy bars were significant, or marginally significant, predictors of behavioral intention. Eating frequency emerged as the best separate predictor of choice, suggesting the behavior might be automatically driven.

In sum, Study 2 results provided cumulative evidence of reliability and of predictive validity for a normative IAT. Evidence of convergent validity failed to emerge clearly but we argue it may have been illustrated through a constructive normative process.

General Discussion and Conclusions

Results sustain the argument that the sole use of explicit measures might not be sufficient to capture normative influence on behavior. Normative influence can be better understood if explicit and implicit measures are combined.

The choice between an apple and a candy bar has proven to be more socially charged and psychologically difficult than previously assumed. As sustained by the relation between the normative IAT measure and intentional choice, individuals might have simplified its complexity by putting others to automatically decide for them. Moreover, behavior frequency was the variable which better predicted behavioral intention independently and was mostly correlated with the normative IAT measure. Considering that the repetition of a response increases the likelihood that it will be automatically activated in the future (Logan, 1988), this suggests that (a) the choice between apples and candy bars involves automatic processes, and (b) normative influence is related to automatic processes.

Automaticity on Social Norms

Normative beliefs were reliably measured implicitly and predicted behavioral intention. Indeed, the only implicit measure that predicted the intentional choice between an apple and a candy bar was the normative one. Implicit attitudes did not predict intentional choice.

Norms' construction processes may occur automatically. Our results suggest that individuals implicitly estimate others' preferences based on their explicit personal preferences, not based on their explicit beliefs towards others' personal preferences. We highlight that there were explicit measures of others' preferences identical to the explicit measures of personal preferences (the feeling thermometer attitude/norm and the

semantic differential attitude/norm). These measures merely differed in perspective. Following this reasoning, the absence of correlations between implicit and explicit normative measures suggests that individuals might not be aware of how normative processes occur.

Our study was quite limited on norm types. We have only explored for social normative beliefs towards others' evaluations. Nonetheless, it broadly supports the need to invest in automaticity research on social norms. A substantial part of normative influence may be unraveled by exploring automatic cognitive processes. Implicit measurement of norms can contribute to push this issue forward. Furthermore, we argue that it is particularly relevant to further distinguish between descriptive and injunctive implicit beliefs.

IAT

The IAT can be adapted to measure implicitly normative beliefs. Two studies evidenced satisfactory accuracy and internal reliability estimates for the normative IAT. In addition, these estimates were similar to those on the traditional IAT. Although we have only tested for "apples vs. candy bars", we suggest findings may apply to other objects. Theoretically, the IAT is a categorization task that can be applied to any pair of objects. Empirically, both the traditional and the personalized IAT have been successfully applied in measuring various objects, such as living beings ("flowers" vs. "insects") or social groups, ("Japanese" vs. "Korean" or "Black" vs. White") (e.g., Greenwald et al., 1998; Olson & Fazio, 2004). We find no reason to expect differently from the normative IAT.

As anticipated, our study reflected difficulties in estimating convergent validity. In accordance with our results' interpretation, we suggest it could be more profitable to

adopt a process-oriented approach that connected the IAT to the associative information's constructive processes. For example, Olson and Fazio (2001) have conditioned attitudes toward novel objects successfully linking the conditioning to a subsequent IAT measure. This result could provide a clearer proof of convergent validity than could correlations between explicit and implicit measures. As previously mentioned, conscious experience is not a direct reflection of mental operations and a variety of mental activities are unavailable to introspection (Nisbett & Wilson, 1977).

The normative IAT had predictive validity for intentional choice between an apple and a candy bar. It would be important to study if its predictive validity applies not only to injunctive IATs but also to descriptive IATs, as well as to other types of behaviors. Worth studying is the reason why the personalized and the traditional IATs did not predict intentional choice. Attitudes, norms and behaviors are expected to be correlated in some degree, and in our study, although implicit attitudinal measures did not predict behavior, explicit attitudinal measures were able to predict behavior independently.

IAT, extrapersonal or personal associations? The claim that the traditional IAT might measure both extrapersonal and personal associations, thus diminishing its criterion-related validity, was neither directly tested nor indirectly evidenced by the personalized IAT results. Nonetheless, we find it interesting that all IAT variants tapped similar implicit preferences. If one's only concern was to measure implicit preferences towards apples and candy bars, then any of the IATs would have worked. However, if one's interest was to implicitly measure the psychological construct related to the intent to choose an apple or a candy bar, then only the normative IAT would have worked.

References

Aarts, H., & Dijksterhuis, A. (2003). The silence of the library: Environment, situational norm, and social behavior. *Journal of Personality and Social Psychology, 84*, 18–28.

Anderson, N. H. (1971). Integration theory and attitude change. *Psychological Review, 78*, 171–206.

Asch, S. E. (1955). Opinions and social pressure. *Scientific American*, *193*, 31-35.

Baldwin, M. W., Carrell, S. E., & Lopez, D. F. (1990). Priming relationship schemas: My adviser and the pope are watching me from the back of my mind. *Journal of Experimental Social Psychology, 26,* 435-454.

Bargh, J. A. (1996). Automaticity in social psychology. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 169–183). London: Gilford.

Bargh, J.A. (2007). Automatic processes in social thinking and behavior. New York: Psychology Press.

Cialdini, R. B. (2005). Basic social influence is underestimated. *Psychological Inquiry, 16*, 158–161.

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, *55*, 591–621.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*, 1015–1026.

Cunningham, W. A., Preacher, K. J., Banaji, M. R. (2001). Implicit attitude measures: consistency, stability, and convergent validity. *Psychological Science, 12*, 163–170.

De Houwer, J., Thomas, S., & Baeyens, F. (2001). Associative learning of likes and dislikes: A review of 25 years of research on human evaluative conditioning. *Psychological Bulletin, 127*, 853–869.

Epley, N., & Gilovich, T. (1999). Just going along: Nonconscious priming and conformity to social pressure. *Journal of Experimental Social Psychology, 35,* 578–589.

Fazio, R. H. (1986). How do attitudes guide behavior? In R. H. Sorrentino & E. T. Higgins (Eds.), *The handbook of motivation and cognition: Foundations of social behavior* (pp. 204–243). New York: Guilford.

Fazio, R.H., & Olson, M.A. (2003). Implicit measures in social cognition research: Their meaning and uses. *Annual Review of Psychology*, *54*, 297–327.

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology, 69*, 1013–1027.

Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C, & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50*, 229–238.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology, 84*, 148–164.

Gawronski, B., Peters, K. R., & LeBel, E. P. (2008). What makes mental associations personal or extrapersonal? Conceptual issues in the methodological debate about implicit attitude measures. *Social and Personality Psychology Compass, 2*, 1002–1023.

Gawronski, B., & Sritharan, R. (2010). Formation, change, and contextualization of mental associations: Determinants and principles of variations in implicit measures. In B. Gawronski, & B. K. Payne (Eds.), *Handbook of implicit social cognition: Measurement, theory, and applications* (pp. 216–240). New York: Guilford Press.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: the Implicit Association Test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the implicit association test: I. an improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*, 197–216.

Greenwald, A. G., Poehlman, T. A., Uhlmann, E., & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology, 97*, 17–41.

Han, H. A., Czellar, S., Olson, M. A., & Fazio, R. H. (2010). Malleability of attitudes or malleability of the IAT? *Journal of Experimental Social Psychology*, *46*, 286–298.

Han, H. A., Olson, M. A., & Fazio, R. H. (2006). The influence of experimentally-created extrapersonal associations on the Implicit Association Test. *Journal of Experimental Social Psychology, 42,* 259–272.

Higgins, E. T. (1996). Knowledge activation: accessibility, applicability and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). London: Gilford.

Higgins, E. T., & Brendl, C. M. (1995). Accessibility and applicability: Some "activation rules" influencing judgment. *Journal of Experimental Social Psychology, 31*, 218–243.

Hofmann, W., Rauch, W., & Gawronski, B. (2007). And deplete us not into temptation: Automatic attitudes, dietary restraint, and self-regulatory resources as determinants of eating behavior. *Journal of Experimental Social Psychology, 43*, 497–504.

Joly, J. E, & Stapel, D. A. (2008). Staff, miter, book, share: How attributes of Saint Nicholas induce normative behavior. *European Journal of Social Psychology, 34*, 1047–1056.

Karpinski A., Hilton J. L. (2001). Attitudes and the Implicit Association Test. *Journal of Personality and Social Psychology*, *81*, 774–78.

Logan, G. D. (1988). Toward an instance theory of automization. *Psychological Review, 95*, 492–527.

Milgram, S. (1963). Behavioral study of obedience. *Journal of Abnormal and Social Psychology, 67*, 371–378.

Miller, D. T., & Prentice, D. A. (1996). The construction of social norms and standards. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 799–829). London: Gilford.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: verbal reports on mental processes. *Psychological Review, 84*, 231–259.

Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative social influence is underestimated. *Personality and Social Psychology Bulletin, 34*, 913–923.

Nosek, B. A. (2005). Moderators of the relationship between implicit and explicit evaluation. *Journal of Experimental Psychology, 134*, 565–584.

Nosek, B. A., & Hansen, J. J. (2008a). Personalizing the Implicit Association Test increases explicit evaluation of the target concepts. *European Journal of Psychological Assessment*, *25*, 226–236.

Nosek, B. A., & Hansen, J. J. (2008b). The associations in our heads belong to us: Searching for attitudes and knowledge in implicit evaluation. *Cognition and Emotion*, *22*, 553–594.

Olson, M. A., & Fazio, R. H. (2001). Implicit attitude formation through classical conditioning. *Psychological Science, 12*, 413–417.

Olson, M. A., & Fazio, R. H. (2003). Relations between implicit measures of prejudice: What are we measuring? *Psychological Science, 14*, 636–639.

Olson, M.A., & Fazio, R.H. (2004). Reducing the influence of extrapersonal associations on the Implicit Association Test: personalizing the IAT. *Journal of Personality and Social Psychology, 86*, 653–667.

Olson, M. A., Fazio, R. H., & Han, H. A. (2009). Conceptualizing personal and extrapersonal associations. *Social Psychology and Personality Compass, 3,* 152–170.

Payne, B. K., Jacoby, L. L., & Lambert, A. J. (2005). Attitudes as accessibility bias: Dissociating automatic and controlled components. In R. Hassin, J. Bargh, J. & Uleman, (Eds.), *The New Unconscious* (pp. 393-420). New York: Oxford University Press.

Paulhus, D. L. (1984). Two-component models of socially desirable responding. *Journal of Personality and Social Psychology, 46*, 598–609.

Rhodes, N., & Ewoldsen, D. R. (2009). Attitude and norm accessibility and cigarette smoking. *Journal of Applied Social Psychology, 39*, 2355–2372.

Schwartz, S. H. (1973). Normative explanations of helping behavior: A critique, proposal, and empirical test. *Journal of Experimental and Social Psychology, 9*, 349–364.

Sherif, M. (1936). *The psychology of social norms*. New York: Harper.

Spencer, S. J., Peach, J., Yoshida, E., & Zanna, M. P. (2010). Learning what most people like: How implicit attitudes and normative evaluations shape prejudice and stereotype threat and are shaped by social identity protection and culture. In J. P. Forgas, J. Cooper, W.D. Crano, J. P. Forgas, J. Cooper, W. D. Crano (Eds.), *The psychology of attitudes and attitude change* (pp. 95-108). New York, NY US: Psychology Press.

Stapel, D. A., Joly, J. E, & Lindenberg, S. M. (2010). Being there with others: How people make environments norm-relevant. *British Journal of Social Psychology, 49*, 175–187.

US Apple Association. (2006). *Apple bits: Core facts.* Retrieved March 4, 2010, from http://www.usapple.org/consumers/applebits/core.cfm

Yoshida, E. (2009). *Impacts of implicit normative evaluations on stereotyping and prejudice.* Doctoral dissertation in Psychology. University of Waterloo, ON, Canada.

Yoshida, E., Peach, J. M., Spencer, S. J., & Zanna, M. P. (2006, January). *Automatic evaluation of what most people like: Developing an implicit measure of norms.*

Paper presented at the 7th Annual meeting of the Society for Personality and Social Psychology, Palm Springs, CA.

Zajonc, R. B. (1968). The attitudinal effects of mere exposure. *Journal of Personality and Social Psychology, 9*, 1–27.

APPENDIX

Please take a moment to fill the following questionnaire.

Name

Email

School ID

---

1. Gender:
- Female
- Male

2. Have you played the game before:

- No
- Yes

If yes, how many times? Select from the list

3. Which country do you live in? Choose...

Complete the following task before proceeding. A list of 10 words has been scrambled. Your task is to try to unscramble and write the words. Please complete this task in no more than 5 minutes.

If after 5 minutes you are not able to unscramble any or all of the words please proceed with the survey.

GINMORN _____

CORALL _____

OOSCHL _____

HULAG _____

TELHO _____

FFOICE _____

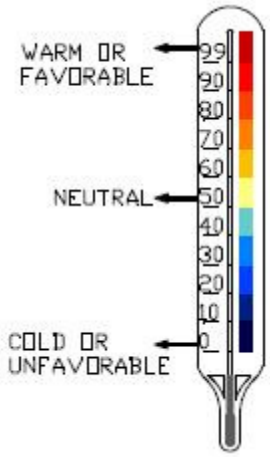
SEHOU _____

REPROT _____

DOWWIN _____

TREWAI _____

4. Please describe **your** general level of warmth or coolness towards the concepts below by writing the appropriate temperature.



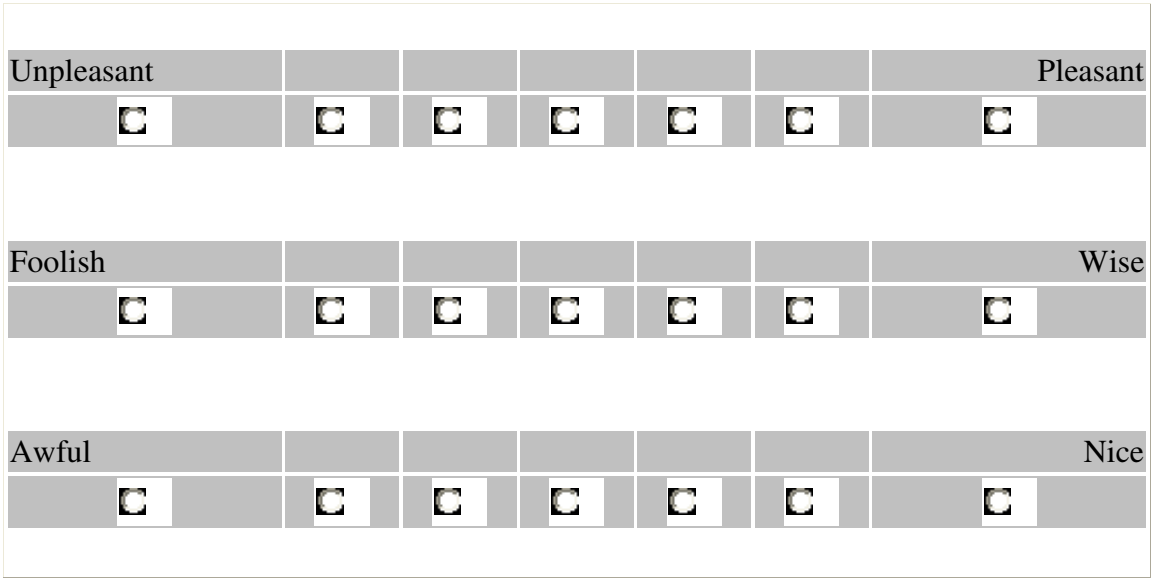
4a. Apples ____ **°F**

4b. Candy bars ____ **°F**

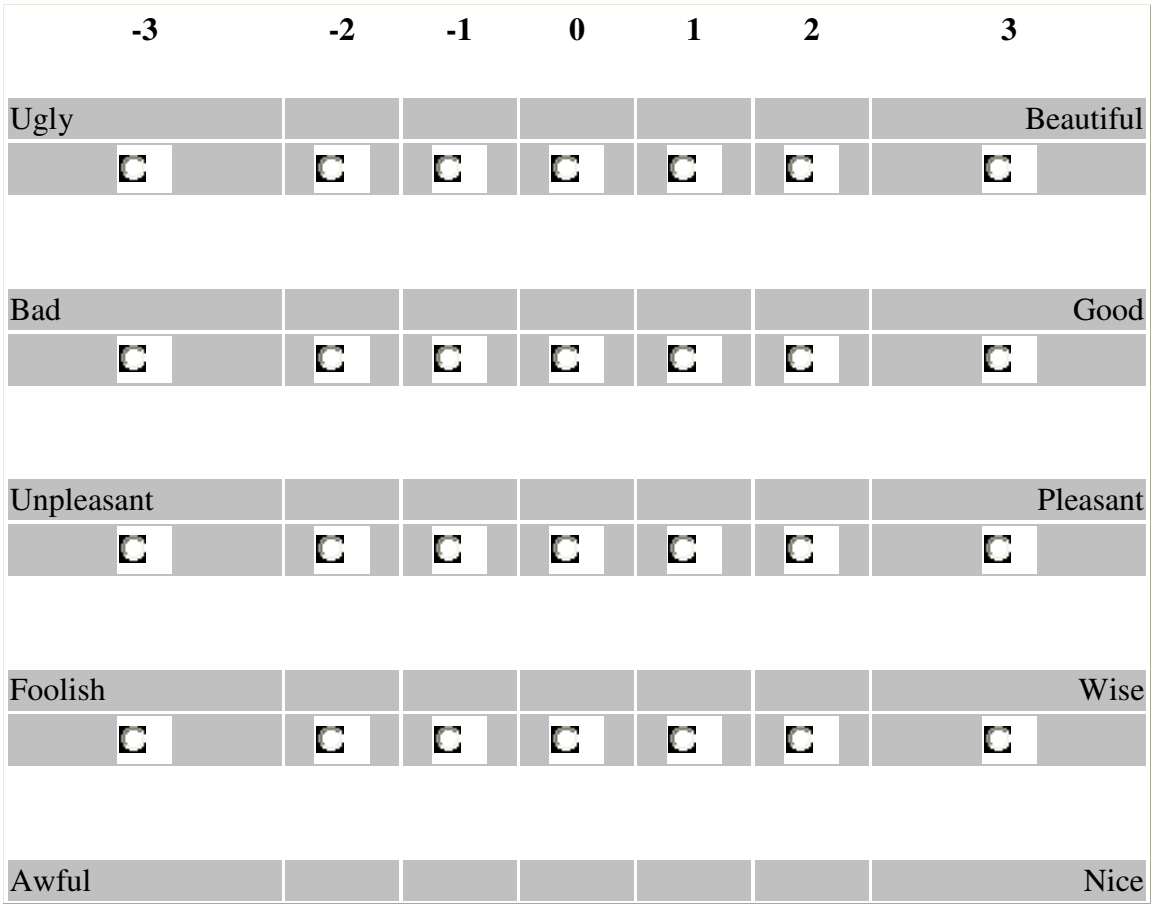
5. Please select the numbers that **you** consider that best describe the two concepts below, by selecting one of 7 possible options. If the adjectives are irrelevant for the concept, please circle zero.

5.1 **Apples**

	-3	-2	-1	0	1	2	3	
Ugly								Beautiful
Bad								Good



5.2 **Candy bars**



6. Please rate the following sentences from *strongly disagree* to *strongly agree*.

6a. Most people like apples a lot.

Strongly disagree						Strongly agree

6b. Most people like candy bars a lot.

Strongly disagree						Strongly agree

6c. Most people approve of liking apples.

Strongly disagree						Strongly agree

6d. Most people approve of liking candy bars.

Strongly disagree						Strongly agree

6e. Most people expect me to like apples.

Strongly disagree						Strongly agree

6f. Most people expect me to like candy bars.

Strongly disagree						Strongly agree

6g. Most people eat apples often.

Strongly disagree						Strongly agree

6h. Most people eat candy bars often.

Strongly disagree						Strongly agree

6i. Most people approve of eating apples.

Strongly disagree						Strongly agree

6j. Most people approve of eating candy bars.

Strongly disagree						Strongly agree

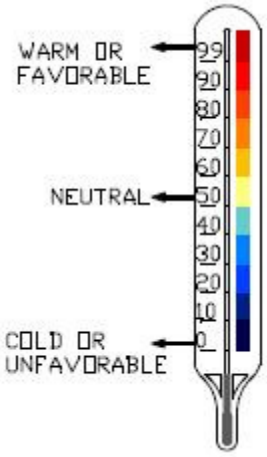
6k. Most people expect me to eat apples.

Strongly disagree						Strongly agree

6l. Most people expect me to eat candy bars.

Strongly disagree						Strongly agree

7. Please describe **most people's** general level of warmth or coolness towards the concepts below by writing the appropriate temperature.



7a. Apples ☐ **°F**

7b. Candy bars ☐ **°F**

8. Please select the numbers that **most people** consider best describe the two concepts below, by selecting one of 7 possible options. If the adjectives are irrelevant for the concept, please circle zero.

8.1 **Apples**

-3	-2	-1	0	1	2	3	
Ugly	☐	☐	☐	☐	☐	☐	☐ Beautiful
Bad	☐	☐	☐	☐	☐	☐	☐ Good
Unpleasant	☐	☐	☐	☐	☐	☐	☐ Pleasant

Foolish						Wise
Awful						Nice

8.2 **Candy bars**

-3	-2	-1	0	1	2	3
Ugly						Beautiful
Bad						Good
Unpleasant						Pleasant
Foolish						Wise
Awful						Nice

9. Please answer the following questions.

9a. How often do you eat apples?

Never						Everyday

9b. How often do you eat candy bars?

Never						Everyday

10. Given a choice between an apple and a candy bar, which would you choose?

Apple Candy bar

Finish the questionnaire!

[Debrief]

The purpose of this study was to explore the relations between implicit and explicit preferences.

The game you played was designed to measure the degree to which people associate positive and negative attributes with "apples" and "candy bars". You will be sent an e-mail informing of your performance and offering interpretation guidelines.

Thank you very much for participating!

```
[Debriefing information e-mailed to participants]
<Interpretation>
      <Top>Interpreting your results: The game is still in the process
of being developed and refined. However, we realize that people want
to know about their score and performance, so we offer the following
guidelines. Based on your responses and reaction times, we suggest the
following interpretation:</Top>
      <Association>
            <TooManyWrong        percent="70"  text="INCONCLUSIVE: Your
pattern of data had a high rate of incorrect responses. We suggest
trying again. " />
            <Inconsistent        diff="1"      text="INCONCLUSIVE: Your
pattern of responses was inconsistent across the different levels. We
suggest trying again. " />
            <StrongIncompatable  Dt="-0.6"     text="STRONG PREFERENCES
FOR CANDY BARS. " />
            <MildIncompatable    Dt="-0.19"    text="MILD PREFERENCES
FOR CANDY BARS. Your pattern of responses is indicative of someone who
associates more strongly positive attributes with candy bars than with
apples.
" />
            <NoPreference        Dt="0.2"      text="NO PREFERENCE.
Your results indicate that you equally associate positive attributes
with apples and candy bars." />
            <MildCompatable      Dt="0.59"     text="MILD PREFERENCES
FOR APPLES.  Your pattern of responses is indicative of someone who
associates more strongly positive attributes with apples than with
candy bars. " />
            <StrongCompatable                  text="STRONG PREFERENCES
FOR APPLES.
" />
      </Association>
      <Bottom> In the eventuality of experiencing discomfort with
these results you may opt to go to Student health, counseling &
psychological services. This game is based on the principles of
implicit social cognition. For more information on the IAT Test, see
https://implicit.harvard.edu/implicit/. The current game uses the
principles of IAT Test to measure the degree to which people associate
apples and candy bars with positive and negative attributes. The
strength of this association is measured using a D-score.</Bottom>
</Interpretation>
```

Normative Influence on Judgment and Behavior

General Discussion and Conclusions

This dissertation aim was to contribute to the theoretical development of normative influence. In particular, we explored as to whether (a) an integrative framework would better capture normative influence in behavior, which had often been pointed out as being insufficient, and (b) if normative knowledge followed the same principles of activation and use as other types of knowledge. Using the integrative framework we were able to capture normative influence in different classes of proenvironmental behavior (Study 1) and to observe what type of normative variables changed after a smoking ban (Study 2). Exploring normative knowledge principles of activation and use, we demonstrated that variations in the accessibility of normative knowledge towards personality traits were related to its use in judgments with normative judged usability (Study 3), and that implicit normative preferences towards apples and candy bars were adequately measured by an implicit version of the Implicit Association Test (IAT, Greenwald, McGhee, & Schwartz, 1998) and predicted the intentional choice between an apple and a candy bar (Study 4).

Simultaneously, these studies provided evidence that normative effects indeed applied to themes that, intuitively, had different social importance, and implied different factors. For instance, the choice between apples and candy bars, apparently candid and neutral objects, was predicted by implicit normative measures and was not predicted by implicit attitudinal measures. Moreover, normative beliefs were investigated by using different research approaches and techniques. Whereas normative beliefs towards (a) proenvironmental behaviors were explored through a correlational study, (b) towards no smoking in public places were explored through a natural experiment, and (c) towards others' assessment of personality traits and food preferences were explored through experimental studies. Taken together, we believe that these studies results reflect the importance normative beliefs have in the individual's judgments and behaviors.

Norms Conceptualization

Normative variables had often been analyzed in isolation. Moreover, most researchers had focused on the injunctive nature of the different social norms and had disregarded its descriptive nature. We argued that this kind of approaches was insufficient in capturing normative influence (see Armitage & Conner, 2001). To better understand it, we used an integrative framework that takes into account personal and social norms and combines the various motivations sustaining social norms. This framework was used to better understand proenvironmental behavior and to analyze the type of normative measures that would change after a smoking ban.

A systematic analysis of normative variables has provided support for the argument that an integrative framework could account for a greater amount of behavior variability than the one typically accounted for. Furthermore, we found preliminary support for the claim that different configurations of normative variables were a reflection of the degree of normative effectiveness and were related to different amounts of behavior variability explained for by normative variables. Our characterization of normative effectiveness emerged as being very useful in better understanding proenvironmental behavior. We believe that it can be extended and refined to other types of prosocial behavior. It can even be hypothesized that different types of social behavior have, in a given societal moment, a specific configuration of normative variables that need to be understood in order to apprehend fully the behavior dynamics and eventually intervene in its change.

The use of the integrative framework has also allowed us to illustrate if and how the several normative variables changed after a smoking in public places ban. In accordance with the focus theory of normative conduct's postulate of salience (e.g., Cialdini, Reno, & Kallgren, 1990), and with the strong effects descriptive beliefs tend

to have in new situations, results evidenced that the largest increases emerged in sociocultural beliefs (descriptive and injunctive) and in subjective descriptive normative beliefs.

The integrative framework of normative influence has not only theoretical but also practical implications. As we have discussed, theoretically it might explain why, and when, normative influence does differently explain for behavior variability. In practice, it might provide guidelines to a successful normative behavior change. For instance, considering social normative beliefs towards public transport use, moderation analyses have evidenced that the relationship between subjective descriptive normative beliefs and behavior was stronger for individuals with high injunctive normative beliefs. This suggests that the implementation of campaigns promoting subjective injunctive norms might promote using public transportation. Nonetheless, moderation analyses have also illustrated that the relationship between sociocultural descriptive normative beliefs and behavior was stronger for individuals with low sociocultural injunctive beliefs, and not for individuals with high injunctive beliefs. Furthermore, for individuals with high injunctive normative beliefs this relationship was negative. Therefore, this suggests that the implementation of campaigns promoting sociocultural injunctive norms could actually decrease the use of public transportation. A specific promotion of subjective injunctive norms would probably be the appropriate strategy in order to increase public transport use.

In what concerns law changes, the integrative framework illustrated which type of norms changed after the successful implementation of the smoking ban. One can consider that laws are successfully implemented when individuals comply with them in the absence of immediate law enforcement, as it seemed to be the case with the smoking ban. These results provide preliminary insights into anticipating which norms should be

promoted, to contribute to its success, and the probable effects of legal implementations. The influence of law in norms and behaviors is an immediate social relevant issue. Therefore, we were surprised to find such small amount of literature on this subject. The seeds to understanding and planning social changes have long been provided in social psychology literature. An example is Kurt Lewin's ground-breaking work in 1940s. Lewin (1947) has even illustrated the steps that should lead to successful change (unfreezing, changing, and refreezing). Combined with the integrative framework of normative influence and theme-specific theories, one would have the basic tools for planning successful social change. Situations similar to the Portuguese (des)regulations of the driver's blood alcohol legal limit could this way be avoided.

A theoretical problem that is implicit throughout our work is the relation between personal and social normative beliefs. Personal normative beliefs are defined as feelings of personal obligation that can come from the internalization of injunctive personal norms (Schwartz, 1977). Nonetheless, personal norms concerning proenvironmental behaviors were found to have quite different relations with both descriptive and injunctive beliefs, being stronger the relations with descriptive beliefs. Furthermore, unlike most social norms, personal norms did not change after the smoking ban. Personal norms evidenced high values before, during, and after the implementation of this change. As far as we know, researchers have not yet studied or theorized further about the relations between these normative variables. We believe it would be important to do so in order to better understand how personal and social normative beliefs relate.

Normative Knowledge Activation and Use

Normative correlational data obtained by self-report measures can provide valuable information about the relations between normative constructs and behavior. However this data does not do not allow one to draw firm conclusions on how normative measures are activated and used in behavior. With the exception of salience, which was a fundamental postulate of the focus theory of normative conduct (e.g., Cialdini et al., 1990), researchers have only recently started to explore the properties of normative knowledge. Understanding the specificities of normative knowledge activation and use can be very relevant in isolating and systematizing the variables, processes, and circumstances connected to normative behavior.

Our studies have focused mostly on normative knowledge accessibility, judged usability and automaticity. Exploring other normative knowledge activation and use properties, such as applicability and expectancies, remains for future research.

We demonstrated that variations in the chronic accessibility of normative knowledge towards personality traits were related to its use in judgment but only when the judgment had normative judged usability. This implies that, when forming impressions, the individual's normative knowledge might be activated and used only when individuals are explicitly asked to use normative knowledge, thus supporting an involvement of controlled processes. It would be relevant to investigate this further to see if these findings are replicated in other types of normative knowledge. Regarding food preference, our findings were not similar. We found evidence that implicit normative preferences in apples and candy bars were related to intentional choice. The choice task had no normative judged usability, thus supporting an involvement of automatic processes in normative knowledge use. These different results might also be related with the studies' different techniques. Whereas the impression formation study

focused more on what could be spontaneously activated and used in response to a stimulus, without the individual's awareness, the food choice study was concerned about how individuals associated critical concepts, focusing on the lack of intention or control of the associations.

Additionally, our studies evidenced that cognitive techniques can be easily tailored to fit investigating normative knowledge. We have adapted Higgins, Rholes, and Jones's (1977) classic study on category accessibility and impression formation, Fazio and William's (1986) procedure to measure chronic accessibility of normative knowledge regarding others' evaluation of personality traits, and Greenwald, McGhee, and Schwartz's (1998) IAT to measure implicit normative beliefs. Therefore, an investment in this area of research seems quite feasible.

Exploring the principles of knowledge activation and use in the several measures that constitute the integrative framework of normative influence was also determinant. We have only analyzed some types of normative beliefs (sociocultural descriptive and sociocultural injunctive normative beliefs). In particular, it would be important to explore personal norms accessibility. It is reasonable that, in equal conditions, personal norms would benefit from an accessibility advantage in comparison to social norms, which would increase the probability of normative behavior. Furthermore, we believe it is of utmost importance to explore whether, and how, injunctive and descriptive implicit normative beliefs relate to behavior and to each other.

Individual beliefs and actions are sustained by several different driving forces which may operate beyond the individual's understanding or control. Moreover, individuals can also undergo to efforts to act in certain ways. Ideally, prosocial behavior is being promoted in both ways, progressively leading to a better state of affairs. This perspective is optimistic, perhaps even as unrealistically optimistic as Dr. Jekyll's, concerning the possibility of returning to his old self. Nonetheless, it might just be somewhere in the middle, between these processes and a glimpse of unrealistic belief, that, throughout time, individuals and societies have kept on changing and evolving.

"Strange as my circumstances were, the terms of this debate are as old and commonplace as man; much the same inducements and alarms cast the die for any tempted and trembling sinner; and it fell out with me, as it falls with so vast a majority of my fellows, that I chose the better part and was found wanting in the strength to keep to it" (Stevenson , 1979, p.89).

References

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic review. *British Journal of Social Psychology, 40*, 471–499.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*, 1015–1026.

Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude-perception and attitude-behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology, 51*, 505–514.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: the Implicit Association Test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology, 13*, 141–154.

Lewin, K. (1947). Frontiers of group dynamics: concepts, method and reality in social science; social equilibria and social change. *Human Relations*, 1, 5–41.

Schwartz, S. H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 221–279). San Diego, CA: Academic Press.

Stevenson, R. L. (1979). *Strange Case of Dr. Jekyll and Mr. Hyde*. New York: Penguin Books.